Language **AND** content? How do curriculum teachers of year 12 English language learners combine two disciplines?

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Abstract

The provision of language instruction in secondary schools for students who speak English as an additional language (EAL) is moving from the domain of the English for speakers of other languages (ESOL) classroom where it traditionally lay. Increasingly, curriculum teachers are urged to take responsibility for language learning within their subject areas. How are curriculum teachers responding? Has this affected their professional relationships with ESOL teachers? What is the nature of the professional engagement between language and content specialists?

This qualitative investigation uses an exploratory case study approach to examine the beliefs and teaching approaches identified by secondary school curriculum teachers as beneficial to learning for EAL students in their classes. Data were gathered using a questionnaire, interviews, and classroom observations for seven participant teachers, then analysed thematically using a conceptual framework derived from content-based language teaching principles.

The findings were that these teachers' approaches to teaching language appear to be shaped by their disciplinary beliefs and pedagogical content knowledge. Their openness to applying a systematic language focus to their teaching seemed to relate to whether their curriculum area was characterised as 'hard' or 'soft'. They struggled to differentiate between language and literacy learning and largely assumed language to mean vocabulary. This indicates that many language challenges facing EAL learners may be invisible to their teachers.

Curriculum teachers' unfamiliarity with research-based language teaching has implications for teacher education and professional development. This study suggests the urgency for compulsory pre-service teaching courses to illustrate how disciplinary meaning is shaped by specific language forms. It also indicates that curriculum teachers with specialist qualifications in teaching EAL learners may provide a powerful link between ESOL and subject expertise.

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Table of Contents

List of Tables

List of Figures

1. Introduction and research questions

Secondary school teaching is a challenging occupation: effective teaching has been singled out as the most significant factor in determining students' academic success (Alton-Lee, 2003; Darling-Hammond, Bransford, & LePage, 2005; Hattie, 2009). Historically, secondary teachers have been valued for their specialist expertise in a curricular domain. Recently, however, the demands on these teachers have broadened beyond the subject-specific. The academic success of students is summatively assessed for national qualifications in the medium of English or te reo Māori throughout years 11-13, and these assessments have a profound effect on the opportunities available to school leavers. Therefore, the New Zealand Curriculum now requires all teachers to balance knowledge of a learning area with the skill of developing subject-specific language proficiency in their learners (Ministry of Education, 2007a). When secondary students come from linguistically diverse backgrounds, the responsibility for promoting their academic success using both disciplinary and linguistic skills can seem like a difficult undertaking for their teachers.

This study of the attitudes and responses of curriculum teachers to the linguistically diverse students in their classes is situated within a socio-cultural perspective. Therefore, it is useful to consider the phenomenon of teaching students for whom English is an additional language, or EAL students, by placing it in a specific social, cultural and historical context. I will show that while the situation in New Zealand is shaped by factors specific to New Zealand, the implications of this study are relevant internationally.

New Zealand education, like that in a number of other countries, has been slow to acknowledge and adjust to the increasing diversity of the student population. Nevertheless, it is unique in a number of respects. As a former British colony, New Zealand is predominantly English-speaking and English is a national language. However, unlike other

former colonies, New Zealand actively strives to be bicultural and has struggled for the past 35 years to redress the imbalance between the two main cultures of Māori (the indigenous people) and Pākehā (people with a non-Māori heritage), and to revitalise the Māori language (te reo Māori) as a significant national language. Also, unlike many other English-speaking nations, New Zealand is geographically isolated and has not attracted significant numbers of migrants and refugees from non-English speaking backgrounds until recently. New Zealand's history of TESSOL[1] development contrasts markedly even with that of its closest neighbour, Australia.

Australia acknowledged its growing linguistic diversity around 1970 and began to implement educational policies to manage this in schools (Lo Bianco, 1990). During the same period, New Zealand was preoccupied with the socio-political issue of how first to recognise the significance of Māori and te reo Māori. Before New Zealand educators could systematically grapple with the linguistic needs of other ethnic minority groups, it was necessary to prioritise the problem of how to nurture and maintain te reo, which was in danger of extinction. In fact, the use of te reo Māori had declined to the extent that "in 1990 over nine out of 10 New Zealanders identified themselves as first language speakers of English" despite Māori numbering around 13% of the population (May, 2002, p. 6). Nonetheless, even while the bicultural debate continued, increasing numbers of non-English speaking immigrants and refugees began to have an impact on the school population.

The first waves of students learning English as an additional language were the children of migrants and refugees. By the late 1990s, the secondary student population changed dramatically as a result of an influx of foreign fee-paying (FFP) students. Consequently, the

[1] Teaching English language in schools to speakers of other languages, as the subject ESOL

government was forced to look more closely at the programmes provided for EAL students, and ESOL teachers became more visible in, and profitable to, schools (Ministry of Education International Division, 2002). These teachers developed English language programmes in response to the needs of FFP students and these included preparation for international English examinations as well as "general" English courses (ESOL) for students at lower levels of proficiency. Some schools had international departments attached to the main campus and FFP students spent varying amounts of time studying ESOL and curriculum subjects with mixed results (Franken & McComish, 2003).

In the mid-2000s international student numbers began to decline at the same time the New Zealand educational system underwent significant changes. New Zealand universities changed their entrance requirements for international students from requiring an IELTS or TOEFL[2] score to requiring assessment credits in the National Certificate of Educational Achievement (NCEA[3]) if these students were transitioning from studying at a New Zealand secondary school. These "Literacy credits" were designed for students with English as their primary language (or L1) and were situated within the English curriculum. ESOL teachers acquired the additional role of preparing EAL students for assessments in the national English curriculum.

Around the same period, language acquisition research reached a consensus that secondary school-aged EAL students require explicit and extensive exposure to curriculum-specific language if they are to bridge the five to ten year gap in academic language proficiency between their linguistic skills and those of their English-speaking peers (Cummins, 2000b; Mohan, 2001). This resulted in a drive for subject teachers to take responsibility for teaching the language as well as the subject content of their classes. The

[2] International English Language Testing System, and Test of English as a Foreign Language.
[3] NCEA comprises of national assessments conducted in years 11, 12 and 13 in New Zealand.

New Zealand Curriculum was rewritten in 2007 with full implementation in schools expected by 2010. This curriculum states clearly that EAL students require discipline-specific instruction both in language and subject content; however, policies and structures have not been put in place to ensure collaboration amongst secondary school ESOL and curriculum teachers. Nor have teacher education programmes adapted to systematically develop the specialist skills required of all teachers of EAL students. Pathways for EAL learners are still ill-defined. Nonetheless, curriculum teachers are urged to take responsibility for teaching the unique language forms of their subject, and the Ministry of Education has funded professional development (PD) programmes to prepare curriculum teachers for teaching EAL students. Nothing has been mandated about the position of ESOL teachers but there appears to be an expectation that they will be able to provide the expertise about language learning to complement their colleagues' curriculum knowledge. In 2011, when schools begin to use functional literacy standards to assess students' literacy at NCEA level one, the question of who will teach and assess language generated in content classes will again come to the fore. This is the current context of TESSOL in New Zealand.

I am in a unique position to conduct research in this area. Currently I am a pre-service teacher educator preparing student-teachers to recognise the role of language in learning across the curriculum. Furthermore, I have conducted EAL and literacy PD with secondary curriculum and ESOL teachers over many years. Finally, I began my professional career as a curriculum teacher of English before engaging in further education about teaching EAL students. In effect, I have interest, experience and qualifications in both curriculum and ESOL teaching which have informed my beliefs about content-based language teaching in New Zealand secondary schools.

This study focuses on teachers of year 12 students because students at this curriculum level have usually passed NCEA level one at the end of year 11. Compulsory education finishes at

the age of 16 in New Zealand, and at that point students can choose to leave school. However students are increasingly making the decision to remain at school for Year 12 to acquire qualifications at NCEA two which offer entry to tertiary courses. At the completion of year 12, students can then complete year 13, the highest year level, to enter university using qualifications at NCEA level three. Year 12 students have chosen to participate in the final, high-stakes years of secondary schooling.

The research questions

This study investigates how curriculum teachers of year 12 classes perceive and manage to combine the skills of teaching their curriculum content and the language skills necessary for effective learning for students learning English as an additional language (EAL students) in their classes.

Two research questions expand upon this issue:

1. How do teachers describe what they do to support EAL students' learning within their curriculum area?
2. What do teachers actually do to support EAL students' learning?

Summary

This chapter places my study within the context of New Zealand education and acknowledges how my own professional experiences have shaped my interest in the research problem.

Chapter 2 looks at some of the literature underpinning the knowledge and beliefs of curriculum teachers alongside research informing theories about how additional languages can be taught in schools. It also looks at international attempts to combine these two distinct skill areas.

Chapter 3 describes the qualitative methodology used to gather and analyse interview and observational data from seven case study participant teachers working in different curriculum areas with students from linguistically diverse backgrounds.

Chapters 4, 5 and 6 report and analyse the findings of this study. Chapter 4 considers the approaches described and practised by these subject teachers. Chapter 5 reviews data according to two composite cases comprising teachers of hard and soft disciplines. Chapter 6 looks at the consonance and dissonance between the ideas of curriculum teachers, and principles of good practice arising from educational linguistics.

The last two chapters discuss the findings from this study and look at issues that it raises for future consideration.

2. Literature review:

Knowledge and beliefs informing the practices of teachers of EAL students

This chapter reviews literature in the three areas of beliefs and practices about teaching in a curriculum; beliefs and practices about teaching a second language; and ways in which the two have been combined to enable EAL students to learn disciplinary ways of thinking through the language of a curriculum area.

I first consider research that investigates and explains the nature of teachers' disciplinary beliefs and how these might impact upon their classroom practices by showing how disciplinary ways of knowing are likely to generate discipline-specific language forms. I review seminal studies conducted in the tertiary sector, then make links with studies from the secondary school context. An orientation towards their discipline may explain how, although teachers can be considered curriculum experts[4], linguistic awareness is unlikely to form part of their disciplinary knowledge. Next, I look at ways that research into language acquisition has informed teaching in schools, and how without systematic emphasis on disciplinary language it may be difficult for English language learners to become full participants in a curriculum community of practice. Finally, I discuss attempts to form disciplinary and linguistic partnerships in secondary schools. The relationship amongst these three areas is represented in Figure 1:

[4] I use curriculum area, subject area, and discipline interchangeably in this discussion.

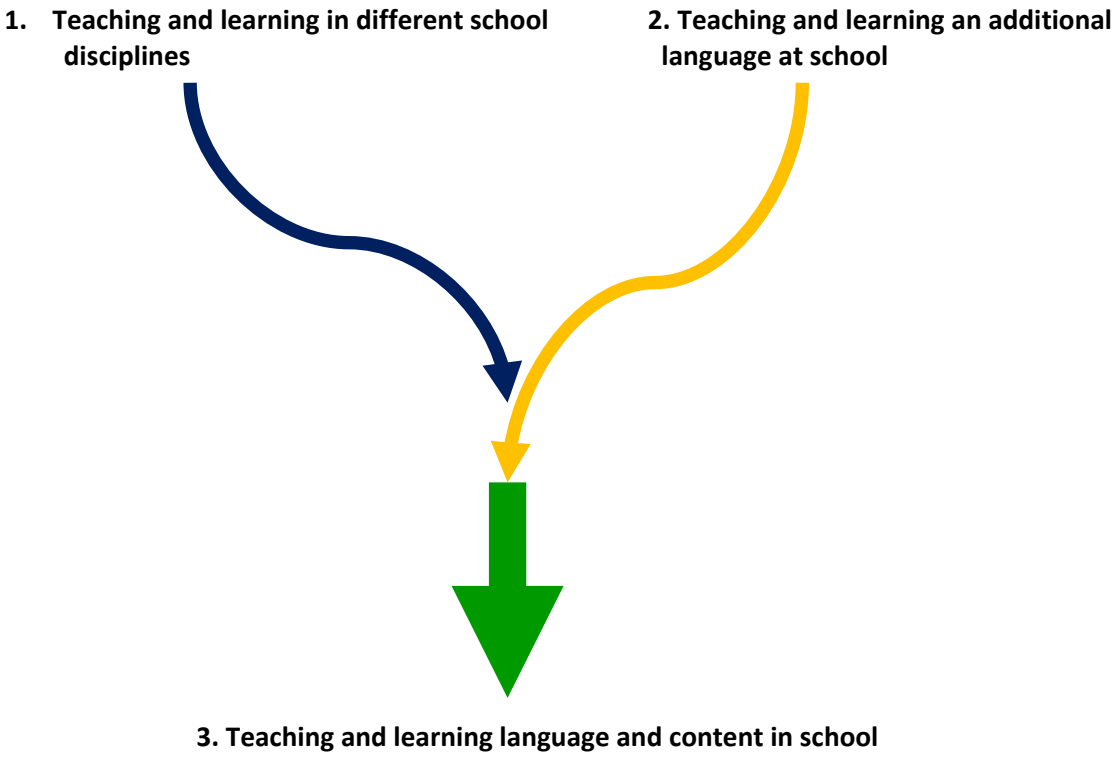


Figure 1: The relationship between teaching and learning language and other disciplines at school

Teaching and learning in different school disciplines

Different subject areas make sense of knowledge in different ways. From a sociocultural perspective, individual teachers' beliefs about knowledge and knowing may be seen as a nested system influenced by their sociocultural context (Buehl & Alexander, 2006). In this view, a sociocultural context reflects a complex and interrelated belief system composed of general and then particular domain-specific beliefs of the structure, sources and stability of knowledge. While there is debate on the extent to which it is possible to distinguish between teachers' general or domain-specific beliefs (Limon, 2006; Olafson & Schraw, 2006), this current study explores the notion of teachers' pedagogical knowledge and their beliefs around this. This is a critical area for study, because as Buehl and Alexander (2006) state, "Teachers' beliefs about pedagogical knowledge as well as content knowledge may play an influential role in teachers' professional development and classroom practice, which in turn may influence students' beliefs" (p.39). My study investigates an even more specific application of teachers' epistemology: that teachers value and justify different ways of knowing and frame disciplinary concepts using modes of expression specific to their area.

In fact, “epistemology is central to disciplinary culture, since the ways in which knowledge is conceptualised are key to thinking in the discipline” (Jones, 2009, p. 86). Educational literature relating to specialist curriculum teaching is dominated by studies undertaken in the tertiary sector showing how disciplinary knowledge and thinking shape teaching practices. These tertiary studies are useful in viewing how the beliefs of secondary teachers may arise because of their similar departmental subject-matter affiliations, and lead to a number of studies in secondary schools (Stodolsky & Grossman, 1995a).

Hard or soft disciplines

Biglan’s (1973a, 1973b) seminal studies of the beliefs held by 222 members of 36 academic departments in two different US universities of different sizes and scope provide a useful analytical framework for capturing some disciplinary characteristics. He demonstrates that approaches to learning in departments can be categorised using three dimensions: hard (science related areas) or soft (humanities or education); applied (education, finance and engineering) or pure (physical sciences, mathematics, social sciences, languages, history and philosophy); and whether a discipline is concerned with living subject-matter (education, horticulture, history) or non-living subject-matter (computer science, engineering, finance, chemistry, mathematics and languages). He concludes that his findings illustrate ways in which “the content and methods of a field are linked to the cognitive and perceptual processes of its members” (Biglan, 1973a, p. 202). Using Biglan’s dimensions, the curriculum areas represented in this study might be defined as: mathematics (hard, pure); chemistry (hard, pure); accounting (hard, applied); automotive engineering (hard, applied); economics (soft, applied); tourism (soft, applied); and religion (soft, applied) (Nelson Laird, Shoup, Kuh, & Schwarz, 2008). These disciplines study non-living subjects with the exceptions of religion and tourism, which do not feature in Biglan’s study. Nonetheless, the curriculum areas in this (my) study might also be grouped under the superordinate of education and classified as soft, applied and living. This might be a distinguishing characteristic between the nature of university and secondary educational

practices given secondary teachers' stronger reported interest in content-related pedagogy (Shulman, 1986). In the secondary school, "teachers of different subjects have been found to hold differing conceptions of the nature of their school subjects and to hold different beliefs about teaching and learning" (Grossman, Stodolsky & Knapp, 2004, p. 5).

One further issue that Biglan (1973b) raises is that hard subjects have a single paradigm or "common framework of content and method" and are therefore likely to generate "social connectedness" amongst their members (p. 210). In other words, if members of a discipline share a single view of knowledge and how it is conveyed, they will find it easier to cohere and collaborate as a united group. The opposite may be true of soft subjects that promote multiple ways of making sense of their knowledge domains. It is less likely that members of a soft discipline share a single interpretation of disciplinary knowledge. In the university setting, Biglan notes that soft areas demonstrate a greater commitment to teaching (as opposed to research). This may have application for the secondary curriculum teachers of soft subjects in this study.

Knowledge related or socially related teaching

Neumann, Parry and Becher (2002) explore the characteristics of these dimensions further, drawing from a series of studies of Australian academics. They add descriptors such as "a cumulative, atomistic structure, concerned with universals, simplification and a quantitative emphasis" to characterise hard pure subjects like chemistry, in which logical reasoning is highly valued (p. 406). In contrast, soft applied subjects such as education may use qualitative approaches to focus on such issues as enhancing professional practice. Soft pure subjects like social sciences are described as creative, "reiterative and holistic", "spiral in their configuration" (p. 407), and open to interpretation (Oolbekkink-Marchand, 2006). Hard pure subjects tend to be taught using tight sequences in which content is perceived to be less negotiable, compared to the loose configuration and critical discussion available to members of soft pure subjects (Becher & Trowler, 2001). Within their study, Neumann and

his colleagues devised a framework distinguishing between knowledge related and socially related aspects of teaching, which provides another useful dimension in evaluating subject-related teacher behaviours, and which is used in the data analysis for my study.

A similar division is raised in Kember's (2001, 2009) studies. In his research into university lecturers' teaching approaches, Kember distinguishes between teacher-centred approaches and those which are student-centred. Teacher-centred lecturers show an orientation towards content knowledge, and he suggests that such lecturers see themselves as members or practitioners of a single discipline rather than "teachers" of that discipline, and that such orientations are commonly reported by teachers of pure disciplines. He contrasts teaching as learning facilitation with teaching as knowledge transmission. Kember's dyads appear to align with Biglan's (1973a, 1973b) soft-hard divisions.

Lindblom-Ylanne, Trigwell, Nevgi and Aswin (2006) also looked at the relationship between disciplinary context and approaches to teaching in the contexts of Finnish and English universities in two complementary studies of a total of 340 teachers. After analysing the quantitative data from two inventories eliciting responses about the relationships across disciplines, approaches to teaching and self-efficacy, they also observed connections between hard disciplines and teacher-focused approaches, and soft disciplines and student-focused approaches. However, they did not feel that Biglan's applied-pure distinction is significant in relation to teaching approaches. They conclude that teaching approaches are not fixed but may change according to the teaching situation, and they underline the effect of context on teaching styles, particularly for teachers in soft areas. The factor of context will be discussed further in relation to studies of secondary teachers.

A doctoral thesis by Oolbekkink-Marchard (2006) reinforces the strong link between findings from studies conducted with tertiary teachers and those relating to secondary teachers.

Oolbekkink-Marchard used a quantitative approach to investigate the beliefs of lecturers and secondary teachers in relation to student self-regulation, recently introduced in Dutch high schools. She applied Biglan's (1973a, 1973b) hard-soft dimensions to secondary as well as tertiary teachers (675 participants in all) and found that questionnaire responses fell into disciplinary categories more than into secondary-tertiary domains. As a result, she added further categories to the hard-soft disciplinary distinctions citing evidence that teachers within soft disciplines tend towards development-shared and opinion-loose approaches, adding to previous findings that soft subjects are holistic with a broad scope (Grossman & Stodolsky, 1995). Ooelbekkink-Marchard concludes that "the nature of knowledge in a discipline is related to the perspectives teachers working in these disciplines have" (p. 84).

A related qualitative study used interview data to examine the differences between 36 secondary and tertiary teachers. This found that secondary teachers (regardless of curriculum area) tended to be more aware of student differences, whereas lecturers had a less personal awareness of their students' development and instead focused on content-related issues (Oolbekkink-Marchand, van Diel, & Verloop, 2006). This interest in learner differences and context bears directly upon the beliefs of secondary teachers.

Research into discipline-specific beliefs and practices conducted in secondary schools has yielded very similar results to those conducted in tertiary institutions. Grossman and Stodolsky (1995) surveyed the views of 399 North American secondary teachers in the curriculum areas of English, social studies, science, mathematics, and foreign languages. They point out that school departments can be considered as subcultures constructed in response to the nature of each subject. The features that discriminate subjects are defined as:

> degree of definition; scope, or the number of distinct fields considered in the school subject; degree of sequence; characterisation of the subject as static or dynamic; and the required or elective status of the subject. (Stodolsky & Grossman, 1995b, p. 229)

The university degrees of secondary teachers within a certain department may be indicative of a subject's scope. For example, science teachers may have specialist qualifications in biology, physics or chemistry, giving science a wide scope. Broad curricula like social studies lack definition in contrast to those like mathematics and foreign languages where curriculum choices are less prescribed. Some subjects may implement across-course dependencies, meaning that students must pass at one curriculum level before they can continue their studies at a higher level. These subjects, like mathematics and foreign languages, may also perceive that elements need to be taught sequentially, in contrast to social studies or English, which in turn may consider subject matter dynamic and negotiable. Stodolsky and Grossman also evaluate teachers' reported control over their curriculum, contrasting the flexibility of English departments to shape the syllabus with the relative syllabus rigidity experienced within mathematics departments. Requirement is another useful descriptor, since compulsory subjects may be run by large and well-resourced departments that, in turn, may generate status for their members in the wider school community.

Stodolsky and Grossman (1995a) conclude that Biglan's (1973a, 1973b) hard-soft distinctions have relevance in secondary schools, but add the dimensions of sequence and flexibility, which may impact upon teachers' choices of instructional practices. They assert teachers in soft, broad scope subjects appear to embrace a wider range of instructional strategies than their harder less flexible counterparts. Nevertheless, teachers of harder sequential subjects tend to collaborate and thus may select consistent and appropriate approaches to support learning in their classes.

Stodolsky and Grossman's results revealed that subjects cluster in two areas. Teachers of mathematics and foreign languages felt their subjects to be more defined, more sequential and less dynamic. In contrast, English, social studies and science teachers described their subjects as less defined, less sequential and more dynamic, and also reported having more

curricular control than their mathematics colleagues. One additional finding was that teachers of mathematics and science expressed stronger beliefs about tracking students to ensure appropriate placement, possibly as a result of perceiving their subject to be ability-based and sequential in nature. These results support findings by Siskin (1991) who sharply contrasts the organisation, placement and assessment practices of mathematics and English departments, and Hallam and Ireson (2008) who reveal that teachers from hard disciplines generally prefer to group and teach students according to their subject ability.

Finally, Grossman and Stodolsky (1995) note that responses varied across individual teachers within subject areas, showing that teachers did not all hold disciplinary beliefs to the same extent. They use Lave's (1988) framework to explain that while departments comprise individual arenas, each teacher operates in a specific (classroom) setting (Stodolsky & Grossman, 1995b).

Drawing on their (2001) phenomenonological study of 16 Australian secondary teachers, Boulton-Lewis, Smith, McCrindle, Burnett and Campbell found distinctions between teacher-centred and student-centred approaches that generally fell within hard-soft classifications. One finding of particular interest in the context of this (my) study was that the four second language teachers' responses aligned to those of teachers of hard subjects. This suggests that these ESOL teachers' beliefs may be similar to those held by teachers of hard subjects like the language teachers in Biglan's tertiary studies. This was contrary to my expectations formed working in New Zealand where ESOL teachers do not enjoy an established and sequential curriculum. However, many Australian states have long-standing ESL curricula historically taught by teachers of English as a Foreign Language (EFL), who are accustomed to sequential (hard) languages curricula through which students acquire increasing linguistic skills (Davison, 1990). Like Grossman and Stodolsky (1995), these

researchers also warn that while hard-soft trends are evident, teachers' conceptions of teaching and learning are not always necessarily congruent.

One further exposition of how the modes of understanding practised in a hard discipline may conflict with those in other (softer) disciplines is undertaken by Donnelly (2006) in a discussion paper exploring intellectual positioning in science, partly in order to examine its apparent lack of appeal to current high school students in the UK. He describes the paramount ontology of science as: viewing the world as an amoral physical presence (not social, spiritual, or cognitive) with which scientists have mechanistic, predictable dealings. Scientists are interested in how objects in the world can be manipulated. Science wishes to analyse, reduce, decontextualise and universalise elements so that individual specifics are subsumed into generalisations and abstracts. Donnelly compares this belief system to disciplines that place importance on aesthetics, creativity, individuals, holistic interpretations and value judgements, and questions how science reform can adapt fundamental beliefs and practices to ethical issues facing the science community. While science teaching in New Zealand may differ in that it explicitly incorporates cultural values (Jones & Baker, 2005), Donnelly's analysis of science ontology provides a useful illustration of the belief system in one discipline and how this may attract or distance potential students.

The table below summarises some of the epistemological characteristics that may distinguish disciplines from one another and inform the teaching approaches of communities of practice. The literature represented in this review does not suggest that all practitioners in all disciplines fall into these extremes, but the table provides a useful framework for comparison.

Table 1: Summary of general characteristics of hard and soft disciplines

Hard		Soft
Single paradigm		Multiple paradigms
Research focussed		Teaching focussed
Cumulative and sequential		Reiterative and spiral
Atomistic	⟷ Affected by context including learner differences ⟶	Holistic
Quantitative		Qualitative
Knowledge related		Socially related
Teacher centred		Learner centred
Knowledge transmission		Learning facilitation
Well-defined		Loosely defined
Sequential content		Negotiable content
Tracking/streaming/requirement		Open entry
Absolute knowledge		Interpreted knowledge
Rational /objective		Subjective/ value laden

Teachers and lecturers are generally aware that knowledge is shaped and interpreted through their disciplinary community and that pedagogical content knowledge develops from shared views of their discipline and how it should be taught (Shulman, 1986). However, they may not be aware of how language captures and shapes the understandings of that discipline. Siskin (1991) observed that different school departments were like visually, aurally and spatially different worlds where "teachers … spoke distinct languages and used references in specialised ways, according to their subject specialty" (p. 143). Assuming that knowledge is shaped by the world-view and function of a discipline, it is logical that knowledge might also be expressed via disciplinary-specific language forms.

Teaching and learning an additional language at school

This section explores some of the studies and theories that have informed beliefs about how languages are learnt, since these have had a significant effect on how teachers

approach the task of teaching language. While the study of second language acquisition[5] is not considered a content area in schools, its application (applied linguistics) has informed approaches to foreign language teaching (EFL), ESOL[6], and more recently content-based language instruction. Since research into additional language acquisition began in the 1960s-1970s, investigations have changed from being exclusively quantitative, discrete linguistics studies with a psycho-cognitive foundation, to including holistic, qualitative studies with a socio-cultural foundation. After considering the research base informing educational linguistics, which marks the intersection between language teaching and education where this study is situated, I look at how constructionist studies have been applied to classroom teaching of language learners.

Initial understandings about teaching a second language comprised investigations into the language acquisition process and investigations into factors affecting language learners (Larsen-Freeman, 1991). These studies represented a departure from behaviourist, audio-lingual approaches where learners were drilled in habits of correctness (Mohan, 1979). Instead, language learning was viewed increasingly as a cognitive or psycholinguistic phenomenon taking place within the mind of the learner. This meant that data available to researchers could only be the audible or visible products of (intangible) cognitive processes. Analyses of audio data gathered during the observation of children acquiring their first language revealed that children did not learn by simply processing input. In contrast to behaviourist assumptions, children were clearly capable of completely original utterances. Innatists explained the phenomenon of creative language output by positing that this potential for creative language construction was a universal, innate human characteristic and assumed that acquisition occurred within a black box-like 'language acquisition device'

[5] The accepted meaning of *second language acquisition* is any language(s) acquired in addition to the L1 or mother tongue of a learner.

[6] ESOL and ESL are used to refer to a class where EAL students are taught English language.

(Chomsky, 1986; Selinker, 1972). Although Chomsky himself did not extrapolate these theories from the acquisition of a first language (L1) to the acquisition of a subsequent language (L2), he observed that language acquisition occurred regardless and even in spite of instructional intervention.

Interlanguage

In the 1970s and 1980s, studies continued to focus on discrete elements of learners' performance, seeking correlations between learners' competence (or potential for acquiring language), and performance (or current proficiency). Errors were no longer construed as poorly learned behaviours, but rather indicators of how linguistic knowledge was translated from the L1 to the L2 according to universal rules of grammar. Selinker (1972), in particular, argued that language development could be measured by making comparisons across the data gathered from linguistic output in a learner's L1, that of a person proficient in the target language, and the learner's approximation of the L2. After conducting comprehensive quantitative investigations into elements of language learners' utterances in their target language and contrasting these with output from native speakers, Selinker and other researchers concluded that learners develop a systematic, rule-governed interlanguage that is impervious to teaching and relatively consistent regardless of learners' L1; and that errors are positive indicators of a learner's L2 acquisition (Dulay & Burt, 1974; Schumann, 1974). Successive investigations conducted with second language learners of different ages and L1s confirmed that grammatical items such as morphemes (Dulay, Burt & Krashen 1982; Larsen-Freeman, 1976) and auxiliaries including interrogatives (Cancino, Rosansky & Schumann, 1975) develop at predictable developmental phases of learning (Hatch, 1978a; Pienemann, 1989), and in a similar sequence to the acquisition of the first language (Dulay & Burt, 1973; Tarone, 1974). The interlanguage hypothesis has since been consistently affirmed regardless of the learners' L1 or other variables such as age, aptitude or (significantly) instruction.

One area that appeared to defy explanation was the uneven rate of language acquisition, which opened a space in the field for considering the role of learner factors such as motivation and aptitude. This was fully explored in Masgoret & Gardner's (2003) meta-analysis. Studies found that even if humans are predisposed to learn language, and acquire linguistic elements in a similar order despite different L1s, language acquisition does not progress at a common rate for all (Ellis, 1989; Lightbown, 2003). Further findings about the rate and nature of acquisition also called into question the efficacy of teaching, particularly longitudinal investigations revealing that a common pattern of second language acquisition is in fact U-shaped, as learners often appear to regress before gaining additional proficiency (Huebner, 1983). Indeed, many learners become stuck at a particular stage of language acquisition and their proficiency appears to 'fossilise' at a particular phase, regardless of instruction (Huebner, 1983; Selinker, 1972). These findings confirmed to applied linguists that errors should be viewed as developmental rather than mistakes that must be eradicated before they are reinforced (which was the behaviourist perspective).

Interlanguage research offered credible explanations as to why learners' errors may be predictable, and why many learners never acquire native-like competency (Han & Odin, 2006). However, if interlanguage developed regardless of instruction and in a pre-determined order, it was unclear what the role of a teacher should be. In fact, researchers offered such observations as: "less explicit teaching of ESL syntax to children may produce better learning", which increased uncertainty about the teacher's role (Dulay & Burt, 1974, p. 129). Teaching was considered unlikely to affect learning unless it coincided with a learner's readiness to acquire a new structure in the L2 (Dulay & Burt, 1973; Pienemann, 1989). If a learner was ready and had time, some researchers concluded s/he would apply an internal monitor (another cognitive black box in which the learner would consciously attend to grammar) to focus on the form of an utterance (Krashen, 1981a). Language ***acquisition*** was seen as a natural process, and teachers were firmly discouraged from

providing explicit grammatical instruction in favour of providing rich (comprehensible) contexts for their learners (Krashen, 1992).

Comprehensible input

Drawing on his first language acquisition studies where young children's interactions with their parents were closely observed (1978), as well as his studies of adult learners of English as an additional language (1976), Krashen concluded that the most important factor in the process of learning a language was providing a rich linguistic environment where there was an abundance of comprehensible input (Krashen, 1981a). He described comprehensible input as being **i + 1** (or a level of input at one level beyond the learner's current proficiency), which parents achieve intuitively. Since learning is the business of schools, this made it difficult for language teachers to decide what to teach each learner. How could **i** be assessed and what would **+1** look like? Many teachers desisted from teaching grammar despite criticisms (Lightbown & Pienemann, 1993) of Krashen's conclusions that language acquisition resulted solely from rich input with negligible impact from instructional practices (Faltis, 1984). Instead, they responded to Krashen's theories by creating linguistically rich classrooms, where oral and written input were expected to provide an environment allowing students to acquire language at their own rate.

In this way input theories provided a break with traditional practices of teaching discrete elements of grammar incrementally or sequentially (Ellis, 2006; Nassaji & Fotos, 2004). Rather, the focus of instruction turned to providing comprehensible reading and interactional contexts which would promote acquisition (Cummins, 2000a). Even today, some researchers and teachers subscribe to an input-only model (Rodrigo, Krashen & Gribbons, 2004), despite subsequent research showing that sustained input-only instructional practices do not have lasting benefits for learners (Lightbown, Halter, White, & Horst, 2002). Generally, the positive impact of comprehensible input as one effective

approach to promoting language acquisition is acknowledged, but Krashen's theories have been supplemented by subsequent interactionist research (discussed below).

Nonetheless, a debate was sparked and still continues about the relative efficacy of a focus on meaning (promoted by Krashen, 1976) or a focus on form in the classroom. In practice for teachers this meant either providing students with language-rich contextualised tasks (with no explicit grammar instruction) or teaching specific grammatical features (Spada & Lightbown, 2008). As Ellis (2006) comments: "the zero approach to grammar was flirted with but never really took hold" (pp. 102-103). Instead, grammar instruction became more strategic and embedded in meaningful classroom practices. Even so, sequential grammar teaching has never regained the dominance it had in traditional language instruction, and doubts about the efficacy of explicit grammar teaching persist (Andrews, et al., 2004; Truscott, 1996, 1999).

Interactionist studies

In contrast to the prevalent input studies, further research revealed that comprehensible input, while undisputed as a desirable component of language learning, is ineffective as the sole means of developing language proficiency (Lapkin & Swain, 1995; Swain, 1988; Swain, Brooks, & Tocalli-Beller, 2002). It was found that providing learners with opportunities for interaction enabled them to understand and produce utterances at a level beyond the **+1** expectation (Hatch, 1978b; Long, 1981). Swain's notion of comprehensible output provided a complement to Krashen's theories.

Research into how English-speaking Canadians learned in grade three and grade six French immersion classes demonstrated that more language learning was likely to occur if learners had repeated opportunities to speak and write interactively. Observations of immersion classes also revealed that while content teachers corrected subject-matter errors, "only 19% of grammatical errors students made were corrected" (Swain, 1988, p. 74). However, when opportunities for

interaction were provided, if students' output was not understood by their listener or reader, the learners would be likely to ***notice*** the gaps in their utterances and seek ways to rework the output until it became comprehensible (Swain, 1996). Negotiating meaning with another person also involved the student being pushed towards conveying a precise, coherent and accurate message (Swain, 2005). In short, learners were more likely to develop language accuracy when given opportunities to produce language in an interactive context. Inherent in Swain's (1996) concept of output was the role of a teacher in 'pushing' students and in designing tasks that require students to interact meaningfully.

Pica, Young and Doughty (1987) reported what is considered to be a seminal study on the impact of interaction on learners' ability to shape and refine linguistic output. They compared how 16 adult non-native speakers of English (NNS) from different language backgrounds followed oral directions given by a native English speaker (NS) under two different experimental conditions, after the same tasks had been trialled by NS participants. In one experiment, the NS read a linguistically modified (simplified) script and repeated instructions if necessary but otherwise did not engage in interaction with the NNS performing the task. In the other, the NNS were encouraged to ask questions and seek clarification from the NS who read an unmodified (unsimplified) script. There was no time limit in either case. A statistical analysis revealed that the more redundancy provided by NS using repetition and modification, the better were the NNS results. Providing opportunities for learners to ask questions to negotiate understanding with others, and allowing time for NNS to process input were considered to be more significant factors than merely modifying the input (level of the script) to make it comprehensible. The implications of this study were that teachers need to share the role of question-asker with students to enable students to create understanding through interactions that they have an active role in shaping. A further significant finding was that text simplification is not a desirable means of supporting NNS, as learners benefit more from text amplification and other pedagogical means of providing message and linguistic redundancy.

Another research project supporting the output hypothesis tested whether affording students the opportunity to produce written linguistic output after reading a passage would assist them to notice and reproduce challenging grammatical features such as the past hypothetical conditional (Izumi, Bigelow, Fujiwara & Fearnow, 1999). Researchers investigated 22 linguistically diverse members of a community college ESL writing class and ran the experiment in two phases. In both phases, the experimental group had the chance to produce written work (output) on a similar topic to a text both groups had read where significant structures were highlighted. The experimental group was also given access to a model essay before writing their own second essay. In contrast, the control group's opportunities for output were limited to answering true-false questions in phase one, and writing an essay on an unrelated topic followed by comprehension questions in phase two. A pre-test and two post-tests (spaced one after each phase) determined all the participants' proficiency in using the target form, then the experimental group's results were compared to those of the control group that had not generated written output in response to the same passage. The results showed improvements in accurate use of the target form by the target group after the second post-test, but less difference between the results of both groups on the first post-test, which the researchers attributed to cognitive overload experienced by both sets of learners. In addition, the learners differed on which linguistic items they chose to notice. Nonetheless, the researchers felt that this study at least partially confirmed that output opportunities enhanced students' ability to notice linguistic items. They acknowledged that the learners' prior educational experiences and language backgrounds, the design of the learning task, and the different skills required when using language receptively and productively were variables that affected the validity of their study, but concluded that input alone had less impact on students' learning than opportunities for deep processing provided by negotiation of output (reconstructing a story in writing).

Other experimental studies during the same period, such as that by Ellis and He (1999) of 50 ESL students at (US) college level, also support the implementation of output opportunities for learners, and, like Izumi et al (1999), acknowledge the complexity of isolating components of the interaction process. Ellis and He investigated the differential effects of premodified input, interactionally modified input, and negotiated output treatments on students' comprehension of directions, and acquisition of new vocabulary present in these directions. The experiment consisted of a pre-test, one of the three treatments or interventions which comprised the same task designed and taught by the same teacher in each group but performed under different conditions, then five post-tests at intervals after the treatment. They found that students in the negotiated output group consistently achieved higher scores in both comprehension and vocabulary acquisition than either of the other groups.

While their quantitative study provides evidence confirming the significance of interaction to learning, Ellis and He conclude that "one has to consider interaction as a totality, a matrix in which learning is socially constructed" where it is difficult to "contrive conditions" that narrowly distinguish between input and output (p. 298). They (and Swain herself, 2008) also dispute the use of discrete information processing terms such as *input* and *output* when language learning is socially constructed.

This reference to a social constructionist view of language acquisition signals a trend away from exclusively cognitive and positivist views of acquiring an additional language (where linguistic products are quantified) towards examination of the social processes involved in learning (foreshadowed by interactional studies). As a consequence, greater attention has been given to the place of oral language in generating literacy and learning.

Sharpe's (2008) study is an example of how more recent research includes a focus on the effect of oral language on students' learning. Employing qualitative methods suited to

capturing processes (more than products), Sharpe observed the first 17 lessons of the year for a year 7 history class to investigate how the teacher talk provided a scaffold into academic language for boys in their first year at an Australian high school. Using analytical tools derived from systemic functional linguistics to examine transcripts of a number of lessons, she identified a number of the teacher's oral strategies including repeating, recontextualising, cued elicitation, recycling and modified questioning that resulted in improving his students' facility in using academic language. Sharpe believed that by using these oral strategies the teacher enabled his students to *appropriate* academic language (Leont'ev, 1981).

Studies such as Sharpe's and the earlier studies of comprehensibility and interaction demonstrated a closer relationship between research about language acquisition and teaching practice also evident in the development of the communicative approach to language teaching (Douglas Brown, 1991), which remains a cornerstone of EFL and ESOL teaching, and is founded on the belief that "one learns to do conversations, one learns how to interact verbally, and out of this interaction syntactic structures are developed" (Hatch, 1978b, p. 404).

Interactionist studies diverged from an information processing view of acquisition posited by Krashen (1981a) and converged with Vygotsky's (1962, 1978) theories in acknowledging the complex inter-relationship between language, interpersonal speech and thought. In an indicative study, Swain and Lapkin (2002) video-recorded individual interviews and then the interaction between two French immersion students from a Canadian middle school as they compared their (pre-test) written version of a story displayed in pictures with that of a native speaker. Stimulated recall was used in the next phase as researchers asked the students what they were thinking each time they identified differences between their version and a text prepared by a L1 French writer (further prompting the students' noticing

and languaging). In the last phase of the experiment (the post-test), when the two students rewrote the story individually, they had incorporated more accurate forms of the target language while preserving a sense of their original stories. The researchers transcribed interactive data looking for language-related themes. They also employed quantitative analysis to compare pre- and post-test samples, noting whether instances of reformulation occurring in the post-test writing resulted in correct or incorrect forms. They found that reformulation is an effective way of encouraging students to notice and reflect on language use and concur with later studies that "languaging about language to mediate L2 learning" results in deeper understanding about language (Swain & Suzuki, 2008, p. 566).

Recent research on university students of French indicates that it is possible for students to conduct mental conversations, which Swain (2008) refers to as private speech and languaging (Swain, Lapkin, Knouzi, & Suzuki, 2009). This is the process of "making meaning and shaping knowledge and experience through language" during which effective learners conduct a mental version of an interaction (if they lack someone to speak to directly) and which allows them to notice and correct errors before they speak (Swain, 2006, p. 89). In short, even conversations conducted internally provide a learner with opportunities to rehearse and refine the accuracy of their utterances. These studies show a trend towards constructivist thinking and qualitative methodology that is interesting to observe in a researcher like Swain whose preference had previously been for qualitative, statistical investigations (Swain & Deters, 2007).

The pedagogical conclusions of such studies are that learners need opportunities to talk and to focus on grammar to enable them to make metacognitive connections. This is in direct contrast to 'input only' beliefs about language learning. Such studies have had a lasting effect in promoting interactive and cooperative teaching methods which draw students' focus to their own interactive and linguistic requirements (Swain, et al., 2002).

Studies of the benefits of interaction for language learning have extended to the investigation of how particular teaching methods like dictogloss and information transfer promote output and consolidate language learning (Pica, 2005; Swain, 1996).

Bilingual studies

Research into bilingualism (including the Canadian studies above) has also shaped policy and practices that affect EAL students. Correlations for a battery of achievement measures (L1, L2 proficiency, aptitude and intelligence quotient or IQ) for English-medium primary school learners from Irish, French, Russian and Hebrew speaking backgrounds provided strong evidence for Cummins' (1979) theory of the interdependence of cognitive academic language proficiency, or CALP. Cummins' studies found that academic language proficiency is transferable from L1 to subsequent languages, unlike basic interpersonal communication skills (BICS) which are not necessarily strong indicators of academic success (Cummins, 1999). In other words, if the learner has developed academic language skills in the L1, there will be a positive relationship between these L1 academic skills and comparable skills in an additional language (Cummins, 1980). This is particularly obvious in older learners who usually have better developed cognitive skills than younger learners, as revealed by Collier's (1987, 1989) extensive studies of the academic achievement of 1548 limited English proficient students aged from 5 to 15 years old.

Adding to these findings, learners arriving young into an L2 environment were revealed to lack transferable linguistic and cognitive resources in their L1, as shown in Roessingh and Kover's studies of learners in grades 7 to 13 in a large Canadian school (2003; Roessingh, Kover & Watt, 2005). Their five year study tracked the trajectory of language development of 47 EAL students who had arrived in Canada at different ages and who were offered varying English language support in preparation for the high stakes *English 30* test used for university entrance. Students sat regular, internal English language assessments (commonly used in schools in Alberta) during the period of the study finishing with the *English 30* in

their final year of study. Their results affirmed the effect of a common underlying proficiency that transfers from L1 to subsequent languages in that students who were older on arrival and had completed academic courses in their homelands were able to make dramatic increases in English language proficiency in comparison to later arrivals with less prior education in the L1. In addition, they found that targeted and explicit instruction in academic language accelerated all learners' progress.

While educational linguists such as Scarcella (2003) dispute that the division between BICS and CALP is as clearly defined as Cummins (1979) describes it, there is widespread agreement with Cummins that academic language places greater demands than basic interpersonal communication skills on students learning an additional language in school. Short and Fitzsimmons' (2007) report shows that academic English instruction is a need for all students, but EAL students in particular require explicit instruction in how to construct academic language since this is not likely to develop naturally (Chamot & O'Malley, 1987, 1994; Scarcella, 2003; Schleppegrell, 2003; Zwiers, 2004-2005).

Research into the learning of bilingual students has convincingly demonstrated the value of students maintaining their L1 while acquiring an additional language (May, Hill, & Tiakiwai, 2004; Valdes, 1997). In their meta-analysis of programmes for English language learners in American schools, Rolstad, Mahoney and Glass (2005) found bilingual programmes enhanced the academic achievement of students significantly more than either English-only or native language-only programmes. This runs contrary to previous assumptions that maintaining the L1 would be detrimental to the acquisition of a new language.

At the classroom level, studies indicate that it can be beneficial for students to negotiate complex academic tasks in their L1. In her masters study conducted in a New Zealand high school, Ufagafa Lameta-Tufuga (1994) investigated the effect of allowing one class to

negotiate science tasks in their L1 (Samoan) while a control class, with a comparable level of science and English skills as well as the same L1, was restricted to using English for the same task. Both classes had to use English to report their results. She observed that the students using their L1 were on task (talked about science) and found that the opportunity to think and interact with others in their L1 enabled the experimental class to explore concepts at a higher level and achieve better results.

Research on the academic value for bilingual learners of using their L1, while mainly conducted with young learners, has had wide-ranging effects on educational policy not only in New Zealand (Barkhuizen, Knoch, & Starks, 2006; Doerr, 2009) but in other countries with significant linguistic minorities such as Canada (Cummins, et al., 2005) and the USA (Valdes, 2005). Leung's (2005) review of international bilingual learning contexts describes a range of programmes from two-way immersion, where instruction is maintained in two languages, to full immersion (such as kura kaupapa in New Zealand). He points out that the political and social purposes for such programmes are as diverse as the programmes themselves, from promoting a particular language in a linguistically diverse society (such as in Malaysia or Solomon Islands) to language revitalisation (as in Wales or New Zealand). Drawing on SAT[7] data on bilingual learners from Arizona, Leung advocates closer investigation into the impact of using different languages in the classroom and urges educators to focus closely on how content-language integration might be consciously managed in the classroom.

North American studies into bilingual school learning reveal further insights into how long it may take to acquire academic language. It appears that when students are older than primary school age and have had continuous schooling in their L1, it may be possible for

[7] Scholastic aptitude test used to assess students' readiness for entry to college in the USA.

them to reach the proficiency of their L2 speaking classmates in approximately four to eight years (Collier, 1987, 1989; Krashen, Long, & Scarcella, 1979; Roessingh, 2008; Roessingh & Field, 2000). This timeframe may be compressed if the teachers provide language-rich contexts for learning and if the learners' L1 is maintained.

Acquiring academic language

What is a language-rich classroom and how can this accelerate the 4 to 8 year timeframe for acquiring CALP? Most teachers of bilingual/EAL students now perceive this to be more than providing comprehensible input in Krashen's (1976) narrow sense of the term. For example, Hammond's (2006) study of a class of year 7 EAL students in an Australian school illustrates how, when a teacher understands the nature of the challenge facing these learners and provides appropriate support, EAL students can participate in a mainstream (unsimplified) English curriculum. The teacher first participated in professional PD on teaching literature underpinned by Vygotskian (1963, 1978) socio-cultural theory and systemic functional linguistics (Halliday & Hasan, 1985) which emphasise the interrelationship amongst social interaction, language and learning. Like the students in Sharpe's (2008) study, these boys were placed in a top-streamed class; however (unlike Sharpe's), these students had been in Australia for no more than three years. The teacher and her ESL colleague conducted needs-assessments to pinpoint the specific language challenges faced by the students, and designed activities to scaffold the literature unit accordingly. Progress toward achieving these goals was measured by the school-wide tests delivered at the beginning and end of year 7. The goal of the *Romeo and Juliet* unit was to develop these students' analytical reading skills and their ability to use different genres of abstract, formal, academic language. In essence the teacher aimed to "support-up" her students by providing rich classroom experiences to scaffold specific skills (Hammond, 2006, p. 275).

Hammond found that several teaching practices appeared to be significant in raising the boys' achievement to, or surpassing, the level of their English-speaking peers. These included an explicit focus on teaching academic language including metalanguage, or language used to talk about and reflect on students' own use of language. The teacher also created links between everyday and academic language incorporating drama to help students engage with the challenging content of this Shakespearian play. Hammond's paper is interesting in that the high challenge-high support teaching approach for EAL students might also apply to the teacher who was challenged to apply new learning in her class but had the benefit of PD (conducted by the researcher) and support from an ESL colleague. It also indicates a shift towards holistic qualitative studies indicating a broader, less sequential view of language acquisition than that of the earlier studies.

Hammond's study is not unique in showing that school-aged EAL students require both high expectations and targeted support to accelerate their acquisition of the language of school. Conversely, if teachers do not actively promote language learning, learners' language acquisition will not develop at a sufficient rate to enable academic success, and it is likely that students will leave high school with few academic qualifications as Collier's (1989) synthesis of international studies on EAL learners reveals. Such studies into bilingual education highlight that students' L1 can be a useful scaffold into learning a L2, but also that bilingual EAL students have an urgent need to acquire academic language at/for school: EAL students have four to eight years of catching up to do. The implications of research undertaken by Hammond, but also by Collier (1989), Cummins, Bismilla, Cohen, Giampapa and Leoni, (2005), and Roessingh and Kover (2003) underline the importance of all teachers playing an active role in building and accelerating bilingual learners' English language proficiency.

A shift toward socio-cultural understandings of language learning

Increasingly, research into how English language is acquired in English-medium schools is viewed through a socio-cultural lens, prompted by what might be called a "social turn in the human sciences" (Haneda, 2009, p. 291). This acknowledges that language and thought are inextricably linked and socially mediated (Bunch, 2009; Vygotsky, 1962; Walqui, 2000a; Zuengler & Miller, 2006). Therefore, research conducted within a socio-cultural paradigm views learning (including an additional language) as an interactive, social process. This begins with the learner's existing world knowledge and experiences, and can be extended with intervention or scaffolding by a more knowledgeable other (Vygotsky, 1962, 1978). Constructionist learning is enabled by teacher talk and small group interactions (Gibbons, 2003; Walqui, 2000b) that allow EAL students to clarify and represent their understanding of concepts using academic language forms (CALP) appropriate to the school context as opposed to using informal social conventions. Studies like Gibbons' (below) illustrate how this process of mediation unfolds in a primary science lesson, where children's social discourse is gradually shaped by interaction with teacher and classmates into a recognisably academic form (Gibbons, 1998; Hammond & Gibbons, 2001).

The Australian project, 'Challenging pedagogies' is another example of the extensive studies into 'scaffolding-up' EAL learners to meet the intellectual and linguistic challenges of school (Gibbons, 2008). Gibbons identified recurring practices that contributed to the engagement of EAL students in the classrooms of teachers from five Australian schools (four secondary and one primary). As in Hammond's (2006) study, a significant component contributing to the success of the study was the collaboration between teachers and researchers which appeared to translate into higher expectation for learners, and collaborative and interactive classroom practices to scaffold learners. Gibbons likens this to an apprenticeship model. Stage one of the study involved gathering data about teachers' views of what might constitute intellectual challenge for EAL learners. In stage two, researchers used this

information to design and implement PD with a socio-cultural foundation for teachers. In stage three, the classroom teacher, the subject teacher and the ESL teacher worked together on an action research project to provide scaffolded intellectual challenge for EAL students with support from researchers and advisors. Data included videoed classroom observations, audio-taped interviews with students and teachers, and field notes written by individual researchers. Teachers reviewed the data from their own schools, and researchers analysed the data as a whole.

As a result of this project, teachers and researchers observed how their students were now "taking on adult-like roles in discipline-related tasks; on their appropriation of relevant and subject ways of thinking and using language; and on their understanding of the relationships between school learning and the world outside school" (Gibbons, 2008, p. 160). The teams found that they identified intellectual practices benefiting EAL learners to be these: students engaged with the key ideas from the discipline; students transformed knowledge into different forms for different audiences; students moved between concrete and abstract theoretical (academic) forms of knowledge; students engaged in substantive (big ideas or conceptual) conversations during their learning; students made connections between spoken, written and other semiotic tools used in their discipline; and students were able to problematise and question 'accepted wisdom'. This study is significant in its collaborative realisation of socio-cultural theory. Teachers and researchers collaborated and conducted analyses and teachers applied these understandings to their learners. It also illustrates a holistic view of teaching and learning an additional language.

The data-informed scaffolding recorded by the action research in this study provided targeted apprenticeships where (ideally) the learner is gradually acculturated into a classroom (academic) community of practice (Lave & Wenger, 1991). Studies of kindergarten, primary, and secondary learners show how the participation of newcomers is

legitimised with varying degrees of success depending on the skill of the teacher and disposition of the classroom community to accept the newcomer (Haneda, 2006; Toohey, 1996; Yoon, 2008).

Yoon (2008) studied how teachers in a New York State middle school viewed their roles in relation to the EAL students in their classes and used this information to determine how teachers positioned themselves and their learners within the classroom community. Yoon gathered data from audiotapes of a series of interviews with three classroom English language arts teachers and two EAL students from each of their classes over one semester. In addition, she audiotaped more than 100 hours of classroom observations in the participant teachers' classes, then analysed transcribed data and field notes for themes relating to interaction patterns that might illustrate forms of positioning by the teacher and student participants. She found that teachers positioned themselves and the EAL students in different ways: as teachers of all students (including EAL students), as teachers of 'regular' students, and as teachers of their subject. As a result of these positions, EAL students were included as valued members of the class or ignored and marginalised by both the teacher and their English L1 classmates. In essence, the teacher played a highly significant role in legitimising and apprenticing students into the community of their class. The concept of positioning used in this study indicates a growing interest in the nature of classroom relationships.

In Yoon's study, the learning of EAL students was affected by the relationships in their classes where the teacher modelled whether they should be distanced from, or included by, their classmates. Dooley's (2004) is a complementary study in that her teachers too might be classified as ignoring or marginalising their students. Dooley was interested in mainstream teacher attitudes and behaviours towards Chinese EAL students in an Australian secondary school that had made an effort to meet Queensland's standard for a

culturally inclusive curriculum. Dooley gathered data through 56 interviews with mainstream and ESL teachers, Chinese students, their parents, and community members. She transcribed audiotapes of interviews and eight observations of two year 10 geography classes where teachers were nominated by administrators as being notably culturally responsive. These data were coded into three main areas according to culturally-based curricular reforms, whether Chinese students were treated the same as or differently from their English L1 classmates, and whether teachers articulated specific pedagogy for Chinese students.

Dooley found that Chinese students were positioned as witnesses rather than pressed into active class participation, as teachers believed that they were not capable of participating fully, or quickly enough, in class discussions. Dooley questioned whether this provided them with sufficient opportunities for output. Chinese students were encouraged to copy others' written work and were not expected to manage independent writing. Dooley concluded that Australian classes socialised the Chinese students into "low-level intellectual approaches" insufficient to "engender independent mastery of the content" (p. 247). In other words, the teachers in the studies by Yoon (2008) and Dooley (2004), in contrast to those in Sharpe's (2008), Gibbons' (2008) or Hammond's (2006) studies, did not employ positioning strategies or targeted pedagogies that demonstrated an expectation that EAL students were capable of academic success.

Systemic functional linguistics

Traditional hard and discrete methodologies favoured by psycholinguistics have recently been complemented by the advent of socio-cultural views of learning. Language proficiency was commonly measured by quantifying students' manipulation of decontextualised, non-disciplinary-specific grammatical items using tests such as the TOEFL. In contrast, current studies evaluate text demands holistically in the context of how meaning is shaped by the participant community. Systemic functional linguistics (SFL) arises from understanding

language as a system of sharing meaning in a particular social context (Halliday & Hasan, 1985). As such it is not absolute, but adapts to specific participants and their purpose and context for the interaction. This compares dramatically to a view of language as one prescribed system that all members of a speech community should aspire to use. SFL uses discourse analysis to investigate the ways in which social purposes are achieved in real, not ideal, contexts by participants' strategic use of observable discursive patterns. Advocates of this approach aim to make these purpose-shaped patterns explicit to apprentice-users to allow them entry into a particular community of language-users.

> Learning is, above all, a social process; and the environment in which educational learning takes place is that of a social institution… and the words that are exchanged … get their meaning from activities in which they are embedded. (Halliday & Hasan, 1985, p. 5)

The emphasis on viewing any text within its particular living, social context represents a radical departure from reified traditional forms of grammar where English usage was manipulated to approximate Latin structures; and also from the innatists' view that there was a single underlying system of rules for any language or context (Chomsky, 1986). Both oral and written academic (school) interactions can thus be characterised by variations of five main social purposes or genres realised by text patterns of increasing complexity: narrating, instructing, describing (reporting), explaining and discussing (Derewianka, 1990; Paltridge, 2000). When text structure is analysed by its particular genre, disciplinary ways of understanding can be captured and shared with curriculum learners in a way that empowers them as members of privileged academic communities. For example, *explaining* is used in many senior secondary school curricula, as shown in Chapters 4 to 6. SFL examines text structures that are actually used in different academic disciplines and makes the grammatical, lexical and textual patterns explicit to learners so that they can construe meanings in the ways preferred in particular subject contexts.

Teachers applying the SFL approach analyse what structures are really used to achieve particular social and academic purposes, then teach them to learners so learners can create meanings in a similar context. First, teachers need to recognise the particular language demands of their discipline. To investigate what language forms are favoured in particular school subject areas (subject-specific literacy demands) extensive research for the "Write it right" Project was undertaken in the 1990s in New South Wales, Australia (Coffin, 1996). The project aimed to make the language demands of various disciplinary texts visible and explicit, and to support teachers to recognise how disciplinary thought was affected through lexicogrammatical forms (Coffin, 2006a). During the course of "Write it right", 4,500 texts produced by secondary students in the curriculum areas of English, geography, history and science were gathered and these textual data were analysed using principles from systemic functional linguistics. The analyses were used to identify the language structures specific to particular disciplines, so that teaching materials could be constructed to make these explicit within the disciplinary context and linked to learning outcomes in school syllabi. The project managers observed that, "on the whole, school syllabi are designed in a way which renders language invisible as a medium for learning about and acting on the world, even though it is through written language that students are most frequently assessed" (Veel & Coffin, 1996, p. 195).

The California History-Social Science Project had similar aims, instituting a focus on history-related language in 2000. This project also used systemic functional linguistics as a theoretical framework. Case studies, such as one showing how a teacher implemented her new learning about identifying and sharing the language features of history texts, illustrate the measurable impact of explicit language teaching implemented in the curriculum area of history (Schleppegrell, Greer, & Taylor, 2008). Action research has also been used as a means to focus simultaneously on the kinds of thinking preferred in history and the ways that these meanings are conveyed in a history classroom.

Another study investigated how a teacher in northern California developed his middle school EAL students' disciplinary thinking and related language (Zwiers, 2006). In the course of this action research project, Zwiers provided a number of teaching scaffolds aiming to promote academic language skills. He captured student responses to these interventions using classroom recordings to gather students' comments throughout the lessons, historical logbooks in which students reflected on their learning each day, and also written essays. Next, he analysed these data for evidence of historical thinking and student appropriation of teacher-modelled linguistic realisations of this thinking including technical vocabulary such as 'secede' and markers to introduce differences of opinion, such as 'some people say'. Zwiers found that modelling ways of thinking using such devices as 'think aloud' strategies and providing multimodal scaffolds including graphic organisers, pair work and sentence starters enabled students to encounter key academic ideas many times and supported them in using these in their writing. Analysing students' writing informed Zwiers' planning for future scaffolding. For example, he reflected that his students had mastered ways of expressing cause and effect, writing persuasively and making comparisons, but he saw little evidence that they could express bias or apply historical concepts to the present.

Such studies examine how different disciplines generate specific language demands and different text types, and how teachers might apply this research by explicitly teaching these forms in the context of their subject. Zwiers focused on teaching several language forms commonly used in history. He mentioned persuading (discussing), comparatives, and cause and effect forms. My study considers learners at secondary level where there are even more tightly differentiated subject areas than those in a middle school. Students in secondary schools move from classroom to classroom and therefore encounter different disciplinary discourse many times every school day (Martin, 1993a). Furthermore, in addition to juggling a range of academic texts (CALP), EAL students also manage oral forms of language (BICS) as they interact with peers and others in informal situations (Halliday,

1993a; Macken-Horarik, 1996). It is obvious that written academic language differs from everyday oral language, but it is not always obvious to teachers that they need to systematically teach learners how to move from 'the grammar of talk' to 'the grammar of writing' in the preferred ways of particular disciplines (Haneda, 1999; Unsworth, 1999).

Brief examples of discursive patterns of two disciplines illustrate some of the differences in text forms. History is concerned with events set in time and place. Students who are unable to convey temporality are often unsuccessful at conveying historical meanings (Coffin, 2006b). Text types include recounts, accounts and historical recounts where participants and places are named and events play out in a chronological sequence mainly captured in the simple past tense. Some texts employ narrative techniques like 'unexpectancy buts' to engage the reader (Veel & Coffin, 1996). Ideally, these familiar kinds of texts can provide a scaffold from which students can learn more complex history genres such as evaluative expositions, also known as historical arguments (Schleppegrell, 2004). The participants in such texts are more likely to be abstract such as 'nationalism', or generalised such as 'women' (Martin, 1993a). Sentences are dense with concepts and often use grammatical metaphor whereby processes are transformed into things and treated like nouns. Noun phrases may be complex and in addition to temporal markers, notions of cause and effect are prominent. Judgements that are conveyed in evaluative texts may be presented in ways that perpetrate the status quo. However, writers suggest that when learners are aware of how meaning is constructed, they can more easily take steps towards critical literacy (Coffin, 2006b; Veel & Coffin, 1996).

In contrast to history texts, science texts are more likely to be procedural in nature. Procedures may avoid direct reference to specific participants, using commands to instruct a learner about how to use various tools or elements in a particular sequence. Another common purpose is classification — sometimes depicted using diagrams and charts —

entailing relational verbs, superordinates, and qualifying or quantifying descriptors (Martin, 1993a, 1993b). Alternatively, texts may be explanatory, where timeless and relational verbs are used to relate generic participants and processes such as 'acids' or 'mitosis' (Schleppegrell, 2004). Grammatical metaphor moves the reader from an active process to an abstraction of that process, while complex noun clauses front-load sentences to create lexical or informational density. Abstraction and an authoritative tone are also achieved by passive constructions (Fang, 2005).

Despite systemic functional linguistic analyses (such as those above) showing sharp disciplinary differences in language use, some researchers feel that there is sufficient generic overlapping for students to transfer knowledge structures from one discipline to another (Chamot & O'Malley, 1994). Halliday (1993b) lists seven overarching characteristics of 'scientific' or academic English. Mohan and Slater (2005, 2006) recommend the application of a knowledge framework, and Scarcella (2003) has devised yet another set of criteria for analysing the demands of academic language that explicitly adds socio-cultural elements to a linguistics framework. Several studies based on socio-cultural theory have been already been reviewed (Gibbons, 2008; Hammond, 2006; Sharpe, 2008), and the principles for teaching language learners underpinning these studies provide an analytical framework in Chapter 5.

Regardless of the approach advocated for effective teaching, there is consensus that it is necessary to teach academic language explicitly (Echevarria, Vogt, & Short, 2008; Fang & Schleppegrell, 2010; Valdes, Bunch, Snow, Lee, with Mathos, 2005; Zamel & Spack, 2006). For the EAL student this is an urgent area to be addressed since, "at one and the same time he is both learning language and **through** language" (Halliday, 2007, p. 54). Curriculum classrooms are the zones where linguistic learning and disciplinary learning meet.

Teaching and learning language and content at school

If students are to successfully acquire an additional language and grasp the necessary curriculum content through the medium of that language, school systems need to accommodate this process. The field of educational linguistics, or the interaction of formal language instruction with education, was first proposed as a distinct branch of linguistics by Spolsky (1972) and this term is used throughout my study. It captures the essence of my research questions, the idea that it takes a considerable time to learn a language for academic purposes, so learning to use it adequately as a medium of learning content and culture requires that:

> ESL students must learn language and subject matter and culture *at the same time*. To meet this goal, *explicit and systematic* integration of language teaching and content teaching is required, a development that could bring educational benefits to students in general. (Mohan, 2001, p. 107)

Language as a medium of learning (Leung, 2001), or content-based language teaching (Brinton, Snow, & Wesche, 2003; Lightbown, 2003; Stoller, 2002; Zwiers, 2006), or content and language integrated learning (Coyle, 2007; Maljers, et al., n.d.; Marsh, 2006) are approaches that recognise that language learning should not be confined to the ESOL or language classroom, the setting of most second language acquisition studies. Integrated language and content teaching is defined as:

> a heuristic label for a diverse group of curriculum approaches which share a concern with facilitating language learning, broadly defined, through varied but systematic linking of particular subject matter and language in the context of learning activities. (Davison, 2001a, p. 57)

These programmes can be classified along a continuum from teaching where language is the primary focus, to teaching where content is the primary focus but share the principle that both language and content need to be taught explicitly since all learning takes place through the medium of language (Swain, 1996).

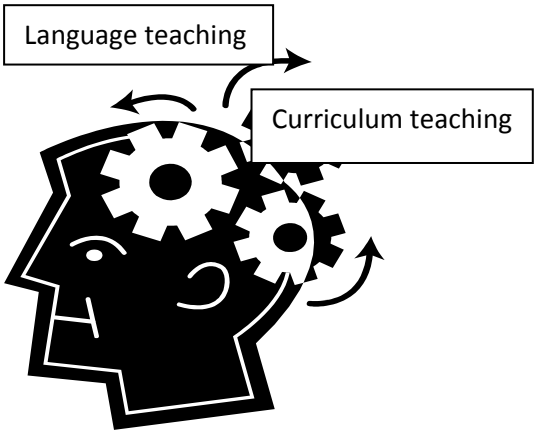
My study investigates how curriculum teachers manage the task of integrating content and language. This section examines different ways that teachers and schools have tried to

achieve this balance. Research into content-based programmes is primarily conducted to evaluate the success of professional learning interventions that attempt to balance content and language teaching. One of the earliest was an investigation into the linguistic and curriculum proficiency of English speakers after their full immersion into French-medium content classes in an experimental programme developed in Canadian schools in 1965 (Genesee, 1994; Snow, Met, & Genesee, 1989). Students in these programmes were found to acquire receptive skills to a level that allowed them to participate fully in classes and acquire greater proficiency than students attending French as a second language classes. However, their productive skills did not develop to the same extent, and researchers identified that this was because the opportunities for student output were limited (Lightbown, et al., 2002; Mohan, 1979). These studies identified that content immersion without any explicit attention to language may result in "hole language" (Davison, 2001b, p. 66). This means that learners may not encounter specific grammatical structures in the content class and thus lack opportunities to notice and reproduce them (Swain, 1996). Such grammatical gaps widen when teachers do not correct or draw attention to students' structural errors. Clearly, a content-only approach was insufficient to fully develop the learners' language skills, as while the curriculum teachers were aware of significant aspects of content, they overlooked students' need for formative feedback on structure.

Conversely, when teachers possess the skills to teach both meaning and form, and include spoken and written texts in their curriculum context, their students appeared able to acquire far greater language proficiency than either their counterparts in language classes (that lacked curriculum content), or in immersion classes (that lacked attention to linguistic form) (Lapkin & Swain, 1995).

Internationally, two different models for achieving this balance of teacher skills have been trialled: professional development to support teachers to acquire both skill-sets; and constructing collaborative teams of teachers with complementary skills.

Professional development: one teacher with two skill-sets



Many countries have PD initiatives whereby curriculum teachers receive instruction about how language shapes meaning in their subject areas. Sheltered programmes including specially designed academic instruction in English (SDIE) are promoted in the USA to provide new learners of English with classes teaching grade-level subject matter in the medium of English as a transition into mainstream classes (Genzuk, n.d.). One recent intervention widely used in the USA is the Sheltered Instructional Observation Instruction Protocol (SIOP). This extensive PD programme developed from a longitudinal project conducted within middle schools in four school districts in different parts of the US. The object of the project was to develop a model of sheltered instruction in collaboration with practising teachers; to train teachers using the refined (SIOP) model; then to conduct experiments to evaluate changes in teacher beliefs and practices and measure the effects of sheltered instruction on their EAL students (Echevarria, et al., 2008). Data used to develop and monitor the intervention were gathered from classroom observations, and the final SIOP model includes both lesson planning and delivery methods that can be used by teachers of mainstream, sheltered and/or ESOL classes. After several years of field trials, the observational model (used to assess teachers' application of specific language teaching

skills) was evaluated for its validity and reliability. In addition, writing from two groups of students was gathered and analysed using the Illinois Measure of Annual Growth in English test. Writing from the experimental group which had SIOP trained teachers was found to be statistically significantly better than that of the control group of students taught by teachers who had no SIOP training.

SIOP programmes are undergoing a continuing series of rigorous evaluations that currently affirm its positive impact on teaching beliefs and behaviours and learner success (Honigsfeld & Cohan, 2008). The significance of SIOP to this study is that its success empirically indicates that it is possible to construct sustainable PD for mainstream teachers to support their teaching of EAL students. Although most widely used in US middle schools, SIOP has been extended to secondary schools and could be a useful model of PD to prepare secondary teachers to teach both language and the curriculum in New Zealand.

While the SIOP project emphasises the impact of PD in extending the pedagogical range and strategy use of curriculum teachers teaching EAL students, Haneda's (2008, 2009) studies illustrate how classroom teachers can deliberately adapt their teaching to provide a sheltered environment to legitimise EAL learners as members of the classroom community. On a smaller scale than the widely applied SIOP studies, and in contrast to the approaches of two of Yoon's three teachers (2008), Haneda's longitudinal ethnographic case study draws on Wenger's (1998) notions of how identity develops through participation in specific discourse as she reports how a curriculum teacher skilfully acculturated EAL students into her Grade 7 social studies class (2009). Over a period of two years, regular classroom observations were videotaped and in the second year certain units of work were studied in more detail to capture "the cumulative nature of learning over time" (2009, p. 339). Haneda also gathered classroom artefacts and conducted interviews with the teacher, students and other school personnel which were transcribed and thematically analysed

with a particular focus on student-initiated interactions. Her aims were to discover how the teacher discursively helped EAL students to understand key concepts and what they learnt through socialisation into this classroom community of practice.

Haneda found that the teacher consciously adapted her output to make it more comprehensible to the EAL students and regularly recapitulated key concepts. She began units with an overview, designed a range of interactive tasks to engage learners, recapped their learning then reviewed the unit. The teacher was particularly skilled in "the *uptake* strategy of building on and amplifying the students' contributions" (2009, p. 343), in other words, while triadic dialogue was commonly used, she did not limit interactions to 'teacher initiation, student response and teacher follow-up'. In extending students' answers she actively engaged them in co-constructing curriculum knowledge. This approach also reflected what this teacher valued as learning: taking responsibility for their own learning and being active members of a political society. Haneda reports how curriculum teachers can enable EAL students to be active participants in a classroom community (2008, 2009). This study, and those by Yoon (2008) and Dooley (2004), show the importance of acculturation into a disciplinary community but (unlike SIOP) they do not show how teachers can develop expertise in systematically strengthening students' expertise in using academic language.

In order to develop curriculum teachers' expertise in teaching students for whom English is an additional language in secondary schools (TESSOL) in New Zealand, the Ministry of Education has sponsored PD initiatives with a specific focus on academic language. Scholarships have also been provided to sponsor curriculum teachers to undertake formal TESSOL education. The impact of such programmes on the content teacher participants was investigated with interesting results. Feryok and Barkhuizen (2008) collected interview data, and data from classroom observations of seven secondary teachers from four

different curriculum areas who had completed TESSOL qualifications as a result of Ministry of Education scholarships. They wanted to evaluate the extent to which teachers' planning and delivery of programmes would reflect TESSOL theory and practice. They also wanted to find out what these teachers perceived to be the most significant changes to their practice as a result of their new learning. Six of the seven teachers reported significant changes to their thinking and felt that they had learnt solutions to the problem of teaching increasing numbers of EAL students in their content classes. Teachers reported shifting from an exclusive focus on content to a learner-centred focus where language was a consideration in their teaching approach. The researchers felt that engaging in learning about TESSOL enabled these teachers to engage in different discourse communities and observed that the participants had adopted new teaching practices which achieved a balance between teaching language and content.

Another evaluation of the effectiveness of TESSOL initiatives was reported by Gray (2006) in her doctoral thesis. In a (2009) paper exploring one aspect of this study, Gray documented how six teachers used their new knowledge to plan content lessons with a focus on language form to assess how well the TESSOL course prepared secondary teachers. She set up an action research project where three pairs of teachers (cases) in three different curriculum areas used principles and teaching approaches from her TESSOL course to collaboratively plan units of work. Gray conducted a focus group meeting at the start of the project where each pair conducted a needs analysis and used TESSOL course-related worksheets to guide their subsequent planning. She analysed the planning documents and reflective journals produced by the teachers, and finally audio-taped interviews with individual teachers before and after they conducted the teaching of their unit. She discovered that the teachers worked collaboratively (content teacher with content teacher) in planning task-based lessons and implemented a number of strategies (such as oral interaction) that supported explicit language learning for their EAL students.

However, the teachers struggled to achieve a balance between language and content given the constraints of secondary school programmes, and this led Gray to reflect on whether the TESSOL course provided sufficient support for secondary content teachers on the language demands of their discipline. Like Feryok and Barkhuizen's (2008) study, Gray's is useful in showing that TESSOL education has an impact on teacher cognition and practices, but it also suggests that the content of such PD must be carefully tailored to the needs of secondary content teachers if it is to be readily applied In the classroom.

In Europe since the mid-1990s, Content and Language Integrated Learning (CLIL) has been a widely used means of combining language and content education in schools. Coyle (2007) describes how the aim of CLIL is for teachers to equally emphasise content and language, giving preference to neither one. In practice, she acknowledges that CLIL is applied quite differently depending on its specific context, duration and purposes, and may range across a complete spectrum from language-led to subject-led programmes. Studies have been made of how CLIL programmes are shaped by their local contexts in European countries as diverse as Austria, Finland and Spain, and how CLIL has affected teacher beliefs (Coonan, 2007; Diaz & Requejo, 2008) and modes of instruction (Jappinen, 2005).

In his review of CLIL in German secondary schools, Klippel (2008) highlights its objectives in adopting an additive bilingual approach to prepare students for an English-dominated world. However, he challenges the consistency with which teachers approach CLIL, echoing Lapkin and Swain's (1995) findings in the Canadian context that while students are exposed to rich contextualised input, the act of teaching a subject in the L2 is no guarantee that language learning takes place. In many schools teaching CLIL, competent English speakers are appointed to teach their subject specialism with few or no language teaching qualifications. Lasagabaster and Sierra (2009) have similar concerns about teachers' qualifications in Basque-speaking schools. Even when teachers have undertaken specialist

language education, a traditional and form-focussed (rather than interactive) methodological approach may be preferred, at least by German teachers accustomed to these approaches to foreign language teaching (Wolff, 2002). Klippel warns that it is tempting for European states to seize upon CLIL as a cheap solution to systematic language classes when very few empirical studies have been conducted and anecdotal evidence suggests that the teaching focus tends to be on content at the expense of language. Klippel raises another issue, which my study pursues, that if CLIL is not applied systematically, the teaching approaches favoured by specific subjects may enhance or reduce opportunities for students to interact and thus gain proficiency in English.

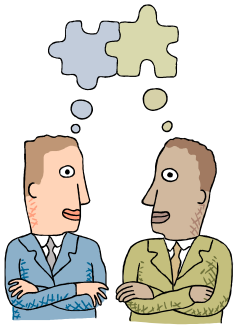
In contrast to the dominance of a content focus in CLIL, other forms of integration may be language-led. This requires the language teacher to develop additional skills in a variety of curriculum subjects. Brinton and Jenson (2003) developed the simulated adjunct model with the objective of maintaining a focus on academic language development for secondary EAL learners using content themes and materials. They record the example of a US teacher who was both an ESOL and social studies specialist and who, with support from the researchers, successfully implemented an integrated programme for her learners to assist their transition into mainstream classes.

Another example of an adjunct model is reported by Huang (2004) in her dual role as researcher and teacher of ESL science in a secondary school in British Columbia. This school taught adjunct classes in science, social studies, literature and community and culture in an effort to meet the needs of increasing numbers of migrant students joining their school population and bridge their entry into mainstream classes. Huang recorded the language and content approaches that she followed while teaching two classes to write a scientific report, based on Mohan's (1986) socio-culturally-based knowledge framework. Over five teaching weeks Huang followed a teaching process of interaction with text, interaction

through text, and interaction about text which involved text deconstruction, reconstruction, and editing. Her objective was to document how students can be socialised into using science knowledge structures through academic writing. Throughout the unit she collected lesson plans, teaching activities, field notes (about the application of plans), student-teacher interactions, and student work written at different phases of the unit. She made a quantitative comparison of students' writing to assess their mastery of both content and specific knowledge structures (in this case 'Classification') and wrote an analytical description of the classroom events using the other data. Although she could not predict how sustained this learning undertaken over five weeks would be, Huang found measurable improvement in her students' understanding of the knowledge structure of Classification and their ability to use scientific discourse to express their learning, and felt that adjunct approach was beneficial to her learners.

Despite the reported success of adjunct approaches, this is a challenging model in that most schools have a wide curriculum and a relatively small ESOL staff with limited cross-curricular expertise to apply to teaching the content of more than one curriculum area.

Partnerships: two teachers with complementary skill-sets



As an alternative to developing complementary skill-sets in individual teachers, partnerships between the mainstream teachers and their ESOL teaching colleagues might be timetabled, as is encouraged in places like Victoria (Australia) and the UK. Unfortunately, few studies report successful collaboration between curriculum and ESOL teachers. Seminal

studies by Arkoudis (2003, 2005, 2006), Creese (2005, 2010) and Davison (2006) represent investigations of attempts to form partnerships.

Problems in collaboration arise in secondary schools because teachers operate within the demarcation of strict departmental boundaries which arise from, and engender, what Arkoudis (2003) calls 'incommensurate epistemologies' between curriculum and ESOL specialists. In her study of the planning conversations of a science and ESL teacher in a Victoria secondary school, she shows how the mainstream teacher assumed the authority of his traditionally respected and clearly defined curriculum to dominate the interaction. In contrast, ESOL is a relatively new and trans-curricular subject and the ESL teacher's deference appeared to reflect the uncertain status of her curriculum area. Despite the ESL teacher's expertise, she allowed herself to be relegated to a subordinate position by her colleague (Arkoudis, 2005, 2006). In order to analyse how the two teachers position themselves, Arkoudis uses both appraisal theory and positioning theory to reveal how teachers construct their views of reality by the way they engage (position themselves) in conversations. It is apparent that these methodological tools reflect a constructionist view of how oral interaction shapes meaning and this study captures exactly how a power imbalance is played out between teachers. This study is indicative of how content knowledge dominates the thinking of secondary school curriculum teachers. The relationship between language and thinking is not recognised by the science teacher in this study, but is seen as an issue that can be sidelined, in the same way as the contributions of his colleague.

In the UK, educational policy encourages secondary school language and content teachers to work together to plan and deliver lessons. Nonetheless, formal collaboration, while considered desirable, is perceived to be too time-consuming to manage. Indeed, collaboration is not a straightforward process as structured opportunities for planning are not timetabled and,

significantly, there is no English as a second language syllabus to balance the demands of a content syllabus (Davison, 2006). This imbalance reflects the situation in other countries, and perpetrates what Creese (2005) refers to as "hierarchies of knowledge" where teaching content matter takes priority over developing linguistic knowledge (p. 193). For example, the primary teachers in Franson's (1999) study felt that the EAL teacher was someone who worked outside the classroom rather than in partnership with them. In contrast, Haworth's (2008) New Zealand primary school teachers were even less comfortable about the prospect of collaborating with EAL support teachers. Some felt threatened by the EAL support teachers' apparent TESSOL knowledge that appeared to be missing from their own professional skill-set, and yet did not wish to position themselves within "the support teacher out-group" in their school (p. 426).

Creese (2005, 2010) uses an ethnography of communication perspective to analyse interview and classroom data and describe the power relations amongst 14 subject and 12 EAL teachers in a year-long study of three London secondary schools (Creese, 2005, 2010). She found that there was rarely a focus on form outside defining key terms, and that the role of language in creating meaning was submerged within the subject matter of the curriculum. Undervaluing language specific aspects of knowledge in this way appeared to extend across content teachers, EAL students, administrators and even ESOL teachers (Creese, 2002, 2006). This may originate from the demands of different institutional roles of each of these members of the school community (Creese, 2006). The result is that an epistemological mismatch persists and: "There is recognition that language work in the mainstream is only peripherally considered when set alongside the teaching of subject content" (Creese, 2005, p. 189). Such attitudes result in marginalisation of both EAL teachers and the EAL students. Creese concludes that secondary school structures militate against collaboration between teachers and, without a school structure or a language curriculum, there is a danger that teachers merely simplify texts without a content or language teaching rationale. However, she feels that collaboration is desirable if students are to effectively learn English and content simultaneously (Creese, 2010).

Models of successful (balanced) collaboration between content and English language teachers remain largely unrecorded. A rare successful model is captured in Gladman's (2009) study of an international college in Japan where collaboration between English language and disciplinary-specific faculty members in both planning and teaching is mandatory. The success of this model may have come about because these institutional practices were implemented from the opening of this college and not imposed later as an intervention. As such, collaboration is a distinctive and 'normal' aspect of the school vision and the school may thus attract teachers open to this approach.

Nonetheless, few other studies have been made "researching the process of co-planning and co-teaching and … supporting and evaluating the development of partnership between ESL/EAL and content-area teachers" particularly in secondary schools (Davison, 2006, p. 455). Using discourse analysis and social positioning to examine the discussions between collaborating elementary teachers in an Asian English-medium school, Davison devised a framework to describe possible developmental stages of teacher collaboration. The framework reveals how teachers' degree of commitment to working with colleagues may move from minimal interaction (or pseudocompliance), to an advanced degree of collaboration (or creative co-construction); while at the same time the teachers exhibit behaviours along a continuum that indicates varying degrees of attitude, effort, achievement and expectations of support relating to their collaboration (Davison, 2006). These criteria provide a useful means of evaluating the success of a teacher partnership, but Davison does not claim that this is a definitive assessment tool, nor does she advise how partnerships might be created and fostered.

Best practice for learning language and content

Achieving a balance of content and language within the classroom is a challenge. Nonetheless particular practices emerge recur from research as into promoting the learning

of EAL students in mainstream classes. These form the basis of international PD programmes such as SIOP, QTEL and *Making language and learning work* (Ministry of Education, 2007b) that aim to accelerate EAL students' achievement. Table 3 represents the key elements of three evidence-based PD programmes for curriculum teachers of EAL students as an illustration of the degree of consensus about good practice.

Table 2: Recurrent principles for good practice in teaching EAL students

Sheltered Instruction Observation Protocol (Echevarria, Vogt & Short, 2008)	**Quality Teaching for English Learners** (Walqui & van Lier, 2010)	**Principles for *Making language and learning work*** NZ Ministry of Education[8]
Concepts are linked to students' backgrounds	Connect students' experiences and subject matter	Know your learners - their language background, their language proficiency, their experiential background.
Content and language objectives clearly defined Develop strategies to teach vocabulary	Sustain a language focus & Share clear criteria Share language and content objectives Develop strategies for vocabulary learning	Identify the learning outcomes including the language demands of the teaching and learning.
Engage students in meaningful activities	Promote disciplinary language use in meaningful contexts Hold high expectations	Maintain and make explicit the same learning outcomes for all the learners
Ensure comprehensible input Use hands-on materials	Sustain academic rigour	Begin with context embedded tasks which make the abstract concrete
Provide ample opportunities for students to use learning strategies	Develop quality (cyclic) curriculum	Provide multiple opportunities for authentic language use with a focus on students using academic language.
Provide frequent opportunities for interaction and discussion	Engage students in quality interactions Use L1 strategically	Ensure a balance between receptive and productive language
Enable comprehensive opportunities for review	Provide adequate feedback	Include opportunities for monitoring and self-evaluation

[8] http://esolonline.tki.org.nz/ESOL-Online/Teacher-needs/Pedagogy/Principles-of-effective-teaching-and-learning-for-English-language-learners

It is evident that while different terms are preferred by different researchers, there are consistent understandings about teaching practices that support EAL students in the mainstream. I use these shared understandings of good practice to frame the questionnaire (Appendix 5), interview prompts (Appendix 6) and as an analytical framework for discussion in Chapter 6.

Summary

This chapter reviewed literature underpinning the teaching of EAL learners in secondary schools. It discussed some of the ways that disciplinary learning shapes the beliefs and behaviour of teachers according to international studies. Curriculum teachers draw upon hard or soft patterns of thinking constructed through their chosen discipline, and EAL teachers are informed by their studies in applied linguistics. These disciplinary influences are developed in greater detail, as revealed by the data generated by New Zealand participants presented and analysed in Chapters 4, 5 and 6.

Historically, studies about language learning were (and continue to be) mainly quantitative and statistical. Lazaraton (2005) estimates that despite increasingly varied methodological approaches in the field of language acquisition studies, 83% of research continues to be solely quantitative. Educational linguistics investigations are carried out in primary or tertiary environments and in EFL settings where there is one teacher for a class and the parameters of the language learning can be easily defined. Empirical research undertaken in the complex and high-stakes environments of English-medium secondary schools is less prominent in the field. Nonetheless, applied linguistics is currently undergoing a radical change under the influence of socio-cultural perspectives on, and functional systemic approaches to, language learning, and a socio-cultural lens is employed to analyse data in this study. However, there are still very few empirical studies available to inform educators about how best to manage the competing demands of teaching of English as an additional

language and content in a secondary school environment. There are even fewer that investigate how curriculum teachers support their English language learners to develop academic language skills. Even so, there is a degree of consensus in educational linguistics about teaching practices that accelerate learning for EAL students in content classes and these principles are used in to frame the data gathering and data analysis in this study. It is hoped that my study will add to this literature and provide a glimpse into how EAL students learn in a New Zealand curriculum environment.

The following chapter details the methodological approach taken in this study to gain and analyse data relating to curriculum teachers' beliefs about, and approaches towards teaching EAL students in their content classes.

3. Method

This chapter places the study within a constructivist system of beliefs and demonstrates how the method of enquiry fits both the research question and this world-view. It describes the data collection process and justifies the use of a qualitative case study approach where the resulting data are analysed thematically. It explores some of the advantages and challenges encountered by this methodology. Finally, the academic rigour of the process is defended.

What worldview underpins this study?

- What is epistemology?
- Why is it particularly relevant for this study?

Social constructivism is a belief system in which meanings are negotiated by participants within a particular social context (Charmaz, 2006.) Situating this study within such a worldview suggests an epistemology where knowledge is negotiated within specific social environments. This contrasts markedly with a view that knowledge can be objective or absolute (Donnelly, 2006). The social context was initially to be defined as the domain of the secondary school, but because I chose participants for their curriculum differences, and they positioned themselves according to belief systems espoused by their curriculum area, this context narrowed further to the teacher as a disciplinary practitioner. Educational psychologists disagree about whether domain-specific (or disciplinary-specific) beliefs constitute distinct aspects of personal epistemology (Buehl & Alexander, 2006), or whether these exist among wider and more nuanced components of epistemological development (Hofer, 2006; Schommer & Walker, 1995). This study indicates that it is possible to link teachers' expressed beliefs about what constitutes knowledge and how it should be taught to understandings of knowledge shared within school disciplines (Biglan, 1973a; Grossman & Stodolsky, 1995). It also suggests that research into educational linguistics is predicated

on understandings of knowledge that may differ from those held by curriculum teachers (Reeves, 2009; Walqui & van Lier, 2010).

There is no clear division between qualitative and quantitative epistemologies and Stake (2010) represents the relationship between the two as a "whirligig" of continua that encompass: learning about particulars or the general; professional or scientific knowledge; micro- or macro-analysis and individual or collective knowledge (p.35). This study examined professional teacher knowledge at the micro (case) level with the expectation that a teacher's epistemological understanding and beliefs influence their pedagogical practice in unique ways.

Why choose a qualitative approach?

- To understand how people make sense of their world
- To acknowledge that the researcher has an impact on making meaning
- To formulate a theory inductively

The qualitative approach used in this study was selected as the most appropriate response to the research question. The research question aimed to discover what a selection of teachers believed about language learning and how they put these beliefs into practice in their teaching. Observations of how teachers operated in the context of their curriculum classrooms would reveal how their practice reflected their ideas about good teaching. Drawing meaning from another person's articulated beliefs and observable practices is a complex process that requires sensitivity from the researcher (Corbin & Strauss, 2008). Sensitivity is required because qualitative research appreciates that a researcher cannot be completely objective in situations where there is human interaction, but needs to apply professional knowledge and insight to what the participants say and do. In this study I had to construct and interpret meaning from teachers' descriptions of their teaching situation

(Brown, 2008; Myers, 1997). Because the participants' beliefs could be portrayed only after being filtered through my understanding of their meaning, it was clear that this study required interpretive methodology (Corbin & Strauss, 2008).

By recognising that meaning is created and shared through social processes and interaction, I place the study within a constructivist (and particularly a social-constructivist) world-view (Patton, 2002). Charmaz (2006, p. 187) explains that:

> …constructivist inquiry starts with the experience and asks how members construct it. To the best of their ability, constructivists enter the phenomenon, gain multiple views of it, and locate it in its web of connections and constraints. Constructivists acknowledge that their interpretation of the studied phenomenon is itself a construction.

This set of beliefs is apparent on many levels of my inquiry: meanings are co-constructed between the researcher and the participants, the researcher and the context, and the underlying premise of the study is that language learning is a socially mediated process (Reeves, 2006).

This study did not begin with a particular theory to test. It derived from "an interest in understanding how people make sense of their world and the experiences they have in the world, [striving] for a depth of understanding as an end in itself" (Winegardner, 2007, p. 2). This directly contrasts with positivist, quantitative studies which usually begin with a hypothesis to be defended or refuted. The purpose was to gain an emic perspective by talking to, and observing, teachers to see whether and how common beliefs and practices might emerge in answer to the research question as: "Qualitative studies are usually exploratory and more hypothesis generating rather than testing" (Corbin & Strauss, 2008, p. 25). While it was expected that teachers were likely to express domain-specific knowledge and demonstrate different epistemological bases for their practices (Sachs, 2001), the relationship between domain and discipline was unclear at the outset of the study (Buehl & Alexander, 2006).

Why use an exploratory case study?

- To ask *how*
- To illuminate participants' decisions
- To analyse teaching decisions and beliefs in a real-life context

Qualitative methodologies encompass a range of approaches. However, Yin (1994) explains that case study method is an approach particularly suited to research questions asking *how* or *why*. Exploratory case studies seek "to find out what is happening, to seek new insights, to ask questions, and to assess phenomena in a new light" (Winegardner, 2007, p. 6). Specifically, exploratory case studies ask the question *how*. Since this study explored and analysed examples of teacher practice by asking and observing *how* teachers meet the needs of language learners, the most fitting method to use was exploratory case study method. This project used case study to investigate the decisions made by teachers in relation to the ELLs[9] in their mainstream classes; both consciously as they described their beliefs and decision-making in interviews, and less consciously as the researcher observed them making decisions in practice.

Context is a significant facet of case study methodology. In fact, Johansson (2003) remarks that: "at a minimum, a case is a phenomenon specific to time and space" (p. 5). Yin (1994, p. 13) further defines a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident". Teaching and learning in secondary school classes are dynamic and interrelated phenomena situated within the specific geographical and social context of classroom interactions. This research used exploratory

[9] EALs and ELLs are used interchangeably. ELLs means English language learners. EALs means learners of English as an additional language

case study method to understand more clearly the intrinsic aspects (or teacher beliefs) underpinning teaching decisions made in real life contexts (Berg, 2009; Stake, 2006).

Why multiple case analysis?

- Multiple sources of evidence
- Multiple cases for reliability or dependability
- Multiple units of analysis for construct validity

For the purpose of this study, interviews, classroom observations and artefacts gathered from an individual teacher constituted one particular case. The data generated around each particular teacher constituted a single bounded system reflecting that teacher's beliefs and practices.

Given the variables at work during a lesson, it was essential to gather multiple sources of evidence to capture as much of the classroom reality as possible in order to construct plausible theories about the components of effective language learning in a curriculum classroom (Denzin & Lincoln, 1998). This was done in two ways: by multiple case analysis, and by using multiple units of analysis. Multiple case analysis allows not just case-specific, but also cross-case conclusions to be drawn. Winegardner (2007) explains that:

> A multiple case study requires two stages of analysis, the within-case and the cross-case analysis. In the former, each case is first treated as a comprehensive unit in and of itself, and the data are analysed and triangulated within the integrity of that case. The cross case analysis then seeks to build abstractions across the cases. (p. 11)

Therefore, data gathered about an individual teacher were collated and analysed as an individual case and then compared and contrasted with those of the other teachers (or cases). Repeating protocol consistently across the different cases gave reliability or dependability to the study (Denscombe, 2007; Tellis, 1997).

Yin (1994) suggests that there are six possible sources of evidence: documents, archival records, interviews, direct observation**,** participant-observation, and physical artefacts. This study chose to use multiple units of analysis (documents, such as questionnaires; interviews; direct observation, including the researcher's field notes; and artefacts including class lists, photographs or diagrams of the classroom, and lesson handouts from the teacher). These multiple units of analysis assured the study of construct validity by providing triangulation, and this is critical in case study methodology in order to secure an in-depth understanding of the phenomenon and capture as much of the reality of the context as possible (Denzin & Lincoln, 1998; Lauer, 2006; Yin, 1994).

Why use interviews?

- Semi-structured interviews are empowering to participants
- Participants can use own words to describe their reality
- Interviews allow flexibility and consistency across participants

Interviews are a popular data-gathering tool because they empower interviewees by allowing them to speak for themselves; they generate rich, dense data; and they are flexible enough to adapt to interviewees with vastly different personalities and experiences.

Kvale (1983) comments that a possible reason why interviews had not gained acceptability as a means of data gathering in the early 1980s might have been:

> …that here ordinary people are able to describe their own life-world, their own opinions and acts, in their own words. In contrast to multiple-choice questionnaires with questions and answers already formulated by experts, the interview makes it possible for the subjects to organise their own descriptions, emphasising what they themselves find important. (p. 173)

These are the very attributes that made the interview a valuable tool in this project. An interview gives participants the power to shape the interviewer's response to their world by the power of their description. In this study, the interviewer oriented the teachers' thinking about language learners by administering a brief questionnaire before the

interview (Appendix 3), and the participants talked about contexts highly familiar to them, where they were accustomed to being in control. This enabled the interview to be a positive and relatively unthreatening experience for the interviewees (Kvale, 1994). Corbin and Strauss (2008) believe that "perhaps the most data dense interviews are those that are unstructured; that is they are not dictated by any pre-determined set of questions" (p. 29). Accordingly, the interviews sought to cover a number of specific themes which were shared with the interviewees (see Appendix 6); they were very fluid in structure and allowed participants to explore the topics in an almost conversational manner (Kvale, 1983).

Noor (2008) also recommends the semi-structured interview because "it offers sufficient flexibility to approach different respondents differently while still covering the same areas of data collection" (p. 1603). This study elicited the beliefs of teachers from diverse curricula, length of teaching experience and relative self-confidence. In addition, the interview contexts varied as a result of technical glitches and the teachers' degree of preparedness. One participant had not completed the questionnaire beforehand which meant that his interview became a think-aloud situation where he talked about what he was writing and why as he completed the questionnaire. This produced an audibly reflective response that generated rich data. As a result, I adopted this approach with other interviewees with equal success. It enabled me to analyse the teachers' responses written on the questionnaire alongside the transcribed oral data which revealed the thinking behind their answers.

Interviewers can be criticised for leading the direction of their interviewees' responses. However, reciprocal influence between interviewer and interviewee need not necessarily be a limitation. Kvale (1983) suggests that: "In a focussed interview what matters is … to lead the interviewee towards certain themes in his life-world but to avoid leading him in the direction of expressing specific meanings about these themes" (p. 190). He also advises the interviewer to acknowledge her presuppositions and biases (which I consider in the

limitations section of this chapter). This advice is essential when using an interpretivist approach to case study methodology as it is important for the reader to be aware that the participants' views are re-presented after being analysed in light of the researcher's own experiences and beliefs (Brown, 2008; Patton, 2002).

Why use observations?

- To give the researcher a feel for the dynamics within each participant's classroom
- To triangulate with participants' expressed beliefs
- To "triangulate to capture and report multiple perspectives rather than seek a single truth" (Patton, 2002, p. 267).

Direct observation is another useful tool for gathering data. Kvale (1983) states that "in participant observation it is the interviewer as a person who is the method, the instrument" (p. 178). This is an additional reminder that data resulting from an observation pass through the analytical and potentially prejudicial filter of the researcher. For this reason, transcripts of each teacher's talk gathered during observations were analysed alongside field notes that I had written during the lesson observation, in an effort to ensure that any analysis stayed close to the meanings created in the source data.

> The reason why observation is so important is that it is not unusual for persons to say they are doing one thing but in reality they are doing something else. The only way to know is through observation. Also, persons may not be consciously aware of, or be able to articulate, the subtleties of what goes on between themselves and others. (Corbin & Strauss, 2008, pp. 29-30)

Thus, it was possible that there would be inconsistency between the teachers' stated practices and their actual practices. As the data analysis progressed and this dichotomy became more apparent, I decided to change the way that I would report this. I would reflect this dichotomy by making a clear structural separation between the described beliefs and the observed practices in order to clearly distinguish between the teachers' beliefs and the observer's interpretation of these in practice. Therefore, the first part of my findings (Chapter 4) would try to adhere closely to the participants' descriptions of their beliefs and the teachers' perceptions of the effects of these beliefs on their practices. At

this phase of the reporting, I would keep my own interpretations to a minimum and try to be as faithful as possible to the teachers' statements. In the second phase of reporting, however, I would use my experience and understandings of language acquisition and teaching to evaluate what I observed about their teaching (Chapter 6). At this point I would look for dissonance and consonance between the participants' stated beliefs and evidence from their practice.

Corbin and Strauss's remark (above) also had resonance for me because my own experiences as an ESOL teacher suggested that curriculum teachers might not have the metalanguage to describe the purposes of their practices in terms of language acquisition processes. I anticipated that I would observe curriculum teachers applying sound practices in their classroom and talking about their experiences using terms arising from their various backgrounds. I did not expect to encounter curriculum teachers who would use the language of applied linguistics to describe their decision making in the classroom. This expectation that individual teachers would describe their world in individual ways fits with what Gillham (2000) calls "the phenomenological meaning" inherent in case studies (p. 7). Teachers might not be able to articulate their reasons but nonetheless be able to employ effective language teaching practices.

Why use physical artefacts?

- To provide triangulation and credibility (Denscombe, 2007)
- To inform and enrich the data comprising each case

A third source of data was included in order to allow for data density and triangulation. The artefacts or extant texts (Charmaz, 2006) gathered varied from teacher to teacher depending on their different approaches and priorities. There were five kinds of physical artefacts, including:

1. Student profiles

Student profiles were significant in that they revealed who had generated data about the EAL students, what data were considered significant, and how they were shared between teachers. The nature and sharing of student information was one indicator of how responsible a curriculum teacher felt for gathering linguistic, experiential and personal knowledge of EAL students. The uses to which these data were put indicated the degree of confidence the curriculum teacher felt about applying language teaching approaches within his or her teaching. The way that class lists and teacher planners were annotated provided additional data.

2. Teacher planners and lesson materials

Some of the teachers showed me their unit plans or parts of their personal planner. Although all teachers used unit plans, few teachers had developed detailed lesson plans. This suggested that these experienced teachers were reasonably flexible in their delivery and responsive to students' understanding of particular concepts. This was helpful in showing the extent to which differentiated teaching was a part of their planning. Other teachers gave me copies of the student handouts relating to the lessons I had observed (Appendices 7, 8 and 9). These artefacts illustrated any scaffolding put in place for the EALs within the class. Lack of explicit planning for EAL students was another revealing indicator since it is equally informative to investigate what data are left out (Charmaz, 2006).

3. Classroom displays

Displays provided clues to each teacher's beliefs about what promotes learning. Current examples of student work, exemplars and models of particular texts, mnemonics, timelines, job opportunities in the field, advertisements for tertiary courses and school notices all contributed to a picture of the classroom culture fostered by the teacher. It was important to qualify the significance of these artefacts by whether the teacher had his/her own classroom or shared with colleagues. Since most of the teachers were experienced and senior in their schools, all but the most junior of them had their own classroom.

4. Observational notes

Observational notes include "a description of the setting and perhaps some informal interviewing" (Corbin & Strauss, 2008, p. 124). These notes proved useful additions to the data. Examples included sketches of the classroom format showing where the teacher positioned himself or herself and how the desks were grouped. These data provided potential clues to the organisational and hierarchical structures within the class. For example, the desks in one participant's class were placed in rows of two facing the front, suggesting both teacher dominance and a shortage of seating space; whereas other teachers grouped the desks in fours and fives, suggesting a more collaborative oral culture in the class. This information in itself is insufficient given that classrooms might have been shared amongst teachers and that some configurations were likely to be in response to fitting large classes into small or specialist rooms. However, it was useful to add this to the pool of data relating to each case.

5. Informal post-observation interview

This was a serendipitous source of data. On one occasion, the tape recorder malfunctioned which forced me to take comprehensive observational notes. At the end of that lesson, the teacher spontaneously sat and talked to me, reflecting on what had happened in the lesson and how her thoughts had developed between the time of the previous interview and the observation. These notes were written up in full by the researcher and shared with the teacher the next day so that she could verify that they provided an accurate record of her lesson and conversation. Although a post-observation interview was planned, it had not been scheduled for that time. The weakness of taking notes without audiotaping is that data were less likely to be complete. Nonetheless, I felt that these notes captured an unexpected, rich and authentic response from the teacher.

Selection of participants

Principles for selection

The purpose of this study was to seek and reflect upon participants with diverse beliefs about how EAL students should be taught and also to capture their diverse approaches to teaching these students effectively. This meant that the research would be best served by seeking out teachers of English language learners who came from varied backgrounds in terms of curricula, professional development, and linguistic and life experiences. The aim was to gain a detailed understanding of what these effective teachers thought worked best for their EAL students. For this reason it was most suitable to take a purposeful approach to participant selection. "The logic and power of purposeful sampling lies in selecting information-rich cases for study in depth" as information-rich cases yield in-depth understanding that "will illuminate the questions under study" (Patton, 2002, p. 273). Flyvbjerg (2006, p. 230) describes such participant selection as "information-oriented" and would define this focus on a range of participants as "maximum variation cases" where the cases differ on one significant dimension: curriculum area.

The selection process

- Recommended year 12 curriculum teachers
- Significant numbers of EAL students in class
- Range of school deciles
- Increasingly purposive sample

The sample was purposeful (or purposive) in that it targeted selected teachers of year 12 curriculum classes who had English language learners in their classes and who had an interest in supporting these students' grasp of academic language by their teaching

methodology, who were nominated by their principals according to stated criteria, and who taught different subjects in schools situated in different socio-economic zones or deciles[10].

Each case study focused upon an expert year 12 teacher who fitted the criteria above and who agreed to participate. I was interested in selecting teachers from diverse curriculum areas in order to explore variations in approaches and beliefs in relation to specific subjects. *Expert* was defined for the purpose of this study as a teacher nominated by his or her principal as both effective in teaching the year 12 classes in their curriculum area and also in meeting the particular needs of ELLs in these mainstream classes. I asked principals across a large urban and semi-rural region in New Zealand to nominate teachers whom they believed to be expert teachers of both their subject and ELLs. This resulted in a cross-curricular selection of teachers perceived by their principals to be effective. This also resulted in a number of potentially effective teachers declining to participate because they did not see themselves as *expert* practitioners. It became apparent that *expert* was a subjective and potentially problematic term and not useful to the recruitment process so I deleted it from the letter.

I selected eight teachers purposively from those nominated ensuring that there was a minimum number of ELLs present in their year 12 class, and that teachers were drawn from a range of schools and subjects. Only one teacher from each school took part, but had two teachers from one school been recommended, they would only have been invited to participate if they taught in different subject areas. I recruited teachers from the following subject areas: accounting, religion, economics, science, mathematics, tourism, automotive engineering and English.

[10] The socio-economic level of the contributing population to a school is described in terms of a decile. Decile 1 represents the parents at the lowest income level and decile 10 the highest.

The most difficult participant to recruit was the eighth teacher. I observed that the range of schools favoured those from high decile areas and the teachers were predominantly monolingual New Zealanders with little background in TESSOL. See Table 2 below:

Table 3: Overview of participants

Year 12 subject	School profile	Years teaching	L1/L2	Language related PD
Accounting	Decile 10 girls	17 NZ	Gujerati English	Subject literacy
Religion	Decile 2 umbrella	3 NZ	English	Transitions programme Assess to Learn (AtoL) ELLP workshop
Tourism	Decile 10 boys	7 NZ + 3	English	School literacy
Economics	Decile 8 co-educational	3 NZ	English	Subject literacy Dip TESOL (underway) Professional conversations
Science	Decile 5 Girls	21 NZ	English	Language across the curriculum using the DVD *Making language & learning work 1* focussing on maths & science
Mathematics	Decile 4 co-educational	12 NZ	English	None
Automotive engineering	Decile 8 Boys	8 NZ	English	School literacy
English[11]	Decile 1 co-educational	?	English/ Samoan	Language across the curriculum using the DVD *Making language & learning work 2* focussing on social sciences Dip TESOL (underway) ELLP

As a result I decided to narrow the purposeful focus in an attempt to recruit an English teacher who was bilingual and/or from a low decile school and/or who had some experience in teaching ELLs.

The English teacher was a teacher known to me in three ways. Firstly, in the previous year she had completed the post-graduate course that I teach on teaching linguistically diverse students. This meant that I was aware of the teacher's knowledge about, and interest in, language acquisition and teaching ELLs. It was also clear through this association that this

[11] This teacher withdrew from the study.

teacher was bilingual and was sympathetic to the challenges facing students learning in an additional language. Secondly, she had participated in departmental PD that I had facilitated the year before. This meant that I had already had the opportunity to observe her teaching a multicultural junior social studies class in her low decile school. Thirdly, this teacher had recently accepted the role of head of ESOL and as a result had attended ESOL workshops presented by me earlier in the year when data were collected. This indicated a strong interest in teaching EAL students. It was clear that we had a strong professional relationship with the attendant risk that she might have felt coerced into participating in the research. However, this risk was balanced by a number of factors. At the time when data were gathered, I had no professional relationship with her in her capacity as an English teacher and had never observed her teaching English. She was not currently involved in any of my PD initiatives in her school and was in a position where she could seek professional assistance in her new role as HOD ESOL, or not, at her own discretion. In addition, I felt that our long acquaintance made it possible for her to say no to my request.

This dilemma was resolved, despite her initial agreement to participate, when work pressure forced her to withdraw from the study. I feel that this resulted in a gap in the study because only one other participant was bilingual and none of the remaining participants had ESOL teaching in their repertoire. In addition, it would have been interesting to observe how a teacher of English balanced the demands of the English curriculum with the language-learning demands of her largely bilingual student population. However, this research is qualitative in design so not orientated to generalisations that might be a focus for quantitative research.

Gender

At the end of 2008, I was concerned that the respondents were almost all male. Although it would not necessarily have compromised the study to recruit all male participants, I was hoping to have a gender balance that reflected that in secondary schools. I felt unable to

actively address the gender balance as it was proving more difficult than anticipated to recruit teachers from a range of curriculum areas and school deciles. I decided to ignore this disparity and concentrate on achieving curricular range rather than achieving gender balance. However, as is clear from Table 2 above, this issue resolved itself and the final participants were four male and three female participants.

Case boundaries

In addition to enlisting teachers from different curriculum areas, I also attempted to select potential outliers to the study in accordance with what Creswell (2005, p. 219) calls "maximal variation sampling". I anticipated that teachers from diverse ethnic and/or bilingual backgrounds would provide a perspective that differed from that of monolingual, New Zealand-born teachers. Three teachers met this definition of an outlier - I refer to all participants by pseudonyms: Kevin is a bilingual Chinese-English speaker brought up in China; Mike is a Gujerati speaker born in New Zealand; and Nina is a Samoan-born New Zealander with English as her first and Samoan as her second language. Unfortunately, the first participant (Kevin) had to withdraw from the study as a result of a timetable change for the year when most data collection was completed. Then Nina withdrew too, leaving only one bilingual teacher. Nonetheless, having even one bilingual participant adds another dimension to the case boundaries.

Why Year 12?

Year 12 curriculum areas are dense in subject-specific, academic language. This language includes a high proportion of "low frequency vocabulary, complex grammatical structures, and greater demands on memory, analysis, and other cognitive processes" than EAL students experience in interpersonal communication outside school (Cummins, 2000b, p. 36). Cummins presents evidence that EAL students require explicit teaching strategies from their teachers and concludes that educating such students is the responsibility of the entire school staff if these students are to short-cut the lengthy language acquisition process and participate at the level of

their L1 peers in a mainstream secondary school environment (also Ministry of Education, 2005, 2007a). Unfortunately, in her literature review on the topic of teaching ELLs in English, history, science and mathematics between 1990 and 2008, Janzen (2008, p. 1031) points out that there is a dearth of investigations into teaching high school learners despite the fact that ELLs are more highly represented in high schools than at lower curriculum levels and "less likely to receive targeted language instruction than are elementary school learners".

Year 12 students have passed the initial hurdle of NCEA level one and are of an age where they may legally leave school. The fact that they are still at school suggests that they aspire to further education and/or training. They are more likely to be motivated to succeed at school than students in year 11 who are legally bound to be there.

The sample included teachers of migrant and international fee-paying students from a range of ethnic and language backgrounds. The sample also included teachers of "generation 1.5" students (Harklau, 2003) from Pacific Nations backgrounds who might not have received targeted language support within the school system because they were New Zealand born and may not have received specific attention beyond the course of any ESOL funding. These students were of particular interest because their oral proficiency might have masked their lack of confidence in the use of academic written language.

The participants

The selection process

In practice, the selection process involved a series of steps taken over a two year period:

1. I obtained ethics approval to recruit, interview and observe teachers (Appendix 1).

2. I sent a letter to four principals (Appendix 2) in a large urban region inviting them to nominate teachers who were considered to be expert in their subject area and in

supporting the academic achievement of EAL students. A follow-up email replicated this information. Schools were prioritised using the ESOL funding records and Ministry information about the ethnic composition of schools as a guideline. I sought teachers of classes including large numbers of immigrant or second-generation New Zealand student populations. After schools with high numbers of Pasifika and immigrant students, schools with international fee-paying students were the next priority.

3. The principals were asked to give these expert teachers an invitation to participate in the research (Appendix 3) and verbally obtain permission for me to contact these selected teachers by email and telephone.

4. I followed up the letter to each principal with a phone call and email asking for the names of those teachers who had given their permission and were willing to be approached.

5. A number of principals declined to give permission for their teachers to participate because they did not wish to overburden busy staff or because their schools were involved in other research projects. Other principals were difficult to contact as a result of intervention by their personal assistants. In addition, a number of teachers declined because they did not perceive themselves to be experts in teaching ELLs or their subject. I responded to this reaction by amending the wording of the letter and replacing the word *expert* with the phrase "perceived to be both effective in their subject area and in supporting English language learners".

6. Since permission was granted by only two of the principals, I contacted additional schools, targeting the more accessible deputy principals. This was a successful strategy resulting in two more participants.

7. I invited the first four willing teachers who had been granted permission by their principals to participate in the first phase of the study. I contacted these teachers by phoning and emailing them to ascertain whether they were willing to take part in the

research and to ensure that they had a sufficient number of EAL students in their year 12 subject class (Stake, 2006). For the purposes of this study, at least one quarter of the class needed to be ELLs as this proportion was likely to create a visible presence in the class. Each participating teacher completed a consent form in accordance with the Victoria University of Wellington ethics requirements (Appendix 4).

8. The participation of one of the proposed teachers was delayed until when he would no longer be a student in one of my postgraduate classes. It was interesting that this person was nominated for the research by the head of ESOL in his school when my letter was passed on to her by the principal. So, although I knew him, he was nominated independently.

9. An additional English teacher felt that his class was becoming too unruly and unfocussed to be even the peripheral subject of research and asked if he could defer his participation until 2009 when he expected to teach another year 12 class with significant numbers of EAL students.

The phases of the study

Phase one

The first two teachers in phase one (Mike and Lee) were interviewed to establish their beliefs about effective teaching of language learners. This took place in term two, 2008. They were asked to nominate times when they would be teaching their year 12 class when they felt that their principles of effective teaching would be visible to an observer. I observed the teaching of their classes. The observation focus followed protocols developed in the SIOP project (Echevarria, et al., 2008) but in a holistic manner reflecting the process of the lesson.

After the observation it was intended that each teacher would be shown the observation sheet and asked to expand or explain the pedagogy displayed in the lesson(s). However, I

did not feel that my notes were clear enough to share in their raw state so it was decided to re-interview each teacher at a later time when they could use transcribed notes to discuss the observed lesson more fully. At this stage they would be asked to explain or clarify the teaching decisions they had made. This parallels Kvale's (1983) fifth stage of interpretation (p. 182). In fact, the procedure for this phase in the study soon evolved as it suited many teachers to participate in the follow-up interview immediately after the observation. This worked well because the events of the lesson were still fresh in their minds and they were eager to share their thoughts on the lesson.

These data were entered into NVivo7 (later upgraded to NVivo 8) and analysed for recurrent themes according to a general grounded theory approach (Charmaz, 2006; Corbin & Strauss, 2008; Rose, 2006).

Phase two

During terms three and four 2008, the same process began with two additional teachers (Alan and Will). These teachers completed the questionnaire then were interviewed to establish their beliefs about effective teaching of language learners. These two participants were also asked to nominate one or more classes for me to observe where they felt they would demonstrate their principles of effective teaching. The observation focus was slightly adapted as a result of the emerging findings from phase one. Primarily, this meant that more comprehensive field notes were taken and that I became more observant about the classroom artefacts.

By this stage it was term four, and the two new teachers were engaged in revision and course completion with their classes. Since they were reluctant to be observed in this stressful period, it was agreed that observation would be undertaken in early 2009 with their new year 12 classes.

Phase three

In term four, 2008, an additional two teachers were contacted (Kevin and Anne). Anne was willing to participate but refused permission by her principal. Kevin agreed to start the process in term one 2009. Kevin was of particular interest as he was a mathematics teacher from a non-English speaking background. Unfortunately, once the timetable for 2009 was issued, he discovered that he would not be teaching a year 12 class with significant numbers of EAL students and was forced to withdraw his participation.

In term one 2009, I contacted the prospective English teacher again. However, despite agreeing to participate, he had acquired additional professional responsibilities from the previous year. It was clear that he still had reservations about participating so I stopped pursuing him as a potential recruit. This meant that I lacked an English teacher.

The two teachers from 2008 (Will and Alan) were observed and their final interviews were conducted.

At this stage I had only half the number of participants that I wanted and had exhausted principals and deputy principals as a means of recruiting participants. Thus, I turned to ESOL teaching colleagues and colleagues in the school support services to see if they could recommend teachers in various curriculum areas. Following their suggestions, a science teacher, a technology teacher and a mathematics teacher were recruited. The first two new participants chose to have their interviews and observations conducted on one day. The third was interviewed but scheduled her observation and follow-up interview in term three. As discussed earlier, the English teacher was the last to be recruited. She planned to schedule her interviews and observation in early term four, but subsequently withdrew.

By early term four, 2009, all data had been collected, having taken approximately 18 months to gather. Although PD relating to language teaching took place in schools over this period, it was unlikely to have had a significant effect on the findings because there was far greater emphasis on school-wide understandings of the *New Zealand Curriculum* (Ministry of Education, 2007a) as a whole, and the disciplinary implications of such aspects as the key competencies.

Data collection

Data collection followed the following process**:**

1. Teacher interviews: to show teachers' perceptions of what is good pedagogy for assisting EAL students in their curriculum area;
    - A questionnaire prepared teachers for the interview and stimulated discussion;
    - Individual teachers were interviewed;
    - Data generated through the interview and questionnaires were audio-taped, then transcribed and entered into NVivo8.
2. Classroom observations: Each teacher was observed conducting one lesson (Stake, 2006). The following data were gathered:
    - classroom displays and desk formation (using photographs or descriptions);
    - field notes recording teaching and learning behaviours (Creswell, 2005);
    - audiotapes of each teacher's talk.

    These were transcribed and entered into NVivo8.
3. Artefacts: such as
    - Lesson plans that (might) reflect the teachers' intended interventions. These were not forthcoming from the teachers who tended to make only sketchy planning notes and more commonly worked from unit plans and tasks used in previous years;

- Student handouts, which provided more evidence of scaffolding (see Appendices 7-10 for examples).

4. Second teacher interview (after the lesson observation)
    - The second interview allowed participants to discuss or explain the teaching approaches including any contingency teaching decisions they made during that class (Gibbons, 2003);
    - This discussion was transcribed and entered into NVivo 8.

5. Teachers were sent the transcripts of the audiotaped interview, classroom observation and follow-up interview. This process allowed for "member-checking" (Charmaz, 2006; Kvale, 1983; Merriam, 1988; Stake, 2006; Yin, 1994). Teachers were asked to elaborate, amplify, annotate, add examples or correct the transcripts, providing construct validity. Generally, they had little to add or edit.

6. The data collection for each case study provided a pilot situation for following cases since these could be adapted as a result of insights gathered by preceding cases.

7. Data collection was limited to seven cases due to the time constraints (Maxwell, 2005) but also because credibility and dependability were established by repetition over this number of cases (Denscombe, 2007). This meant that, by ceasing data collection at this point, a strict grounded theory approach requiring repeated iterations to test emergent theories was not followed (Corbin & Strauss, 2008).

Table 4: Summary of methods used for data collection

Pseudonyms	Questionnaire	Pre-observation interview	Observation	Post-interview interview (directly after observation)
Participant 1 Mike (male)	Completed before interview	85 minutes	I hour on different day from pre-interview	None
Participant 2 Lee (female)	*Completed before interview*	*60 minutes*	*I hour (tape malfunctions) on different day from pre-interview*	*Informal discussion 20 minutes (notes shared with teacher)*
Participant 3 Louise (female)	Completed during interview	50 minutes	I hour on same day as interviews	70 minutes
Participant 4 Will (male)	Completed before interview	60 minutes	1 hour on different day from pre-interview	24 minutes
Participant 5 Alan (male)	Completed during interview	60 minutes	I hour on different day from pre-interview	23 minutes
Participant 6 Chris (male)	Completed before interview	60 minutes	I hour on same day as interview**s**	25 minutes
Participant 7 Alice (female)	Completed before interview and discussed during interview	60 minutes	1 hour on different day from pre-interview	22 minutes

Analysis of results

- How was a generic inductive qualitative model used to analyse data?

The data were analysed using interpretational or interpretive methods. "Interpretational analysis is a process for close examination of case study data in order to find constructs, themes, and patterns" (Winegardner, 2007, p. x). A grounded theory approach seemed the most appropriate starting point for analysing data in that:

> The case study researcher, working *inductively* from what's there in the research setting develops *grounded theory*: theory that is grounded in the evidence that is turned up. (Gillham, 2000, p. 12)

Grounded theory appeared to be an ideal choice for analysing exploratory case study data that explored teachers' beliefs and practices as they emerged from interviews and observations. Nonetheless, my approach developed into a generic inductive qualitative model for both logistical and also theoretical reasons as I decided to use existing theory as a framework for interpreting findings (Hood, 2007; Woods, Priest & Roberts, 2002).

The analytical process was conducted in this way:

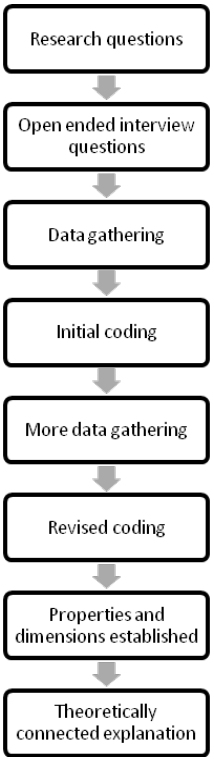


Figure 2: The process of analysis

Open-ended interview questions were framed consistent with the research questions (Appendix 6). Data were collected through:

a. teacher questionnaires (Appendix 5);

b. teacher interviews ;

c. observations of the participants and their classes;

d. post-observation interviews with teachers to discuss the observation.

Transcripts of these data were coded into preliminary categories using gerunds and noun phrases (Charmaz, 2006; Rose, 2006). Coding was performed both electronically (NVivo 8) and on print copies of transcripts, on a case by case basis.

Coding

Part way through the data gathering and analysis process it became clear that a pure form of grounded theory, where codes are not predetermined, was not an ideal fit for this project. I had shaped the direction of the participants' responses into categories by using a questionnaire; in grounded theory the data are encouraged to emerge without the imposition of predetermined categories. Three participants completed the questionnaire during the interview, which further predisposed them to discuss certain ideas relating to language acquisition. Four participants had completed the questionnaire prior to the interview but even so the direction of the interviews was shaped by lines of questioning congruent with the questionnaire (Patton, 2002), as question prompts were shared with the participants (Appendix 6). It seemed 'untrustworthy' to ignore the main themes of the questionnaire, especially when there is theoretical justification for beginning an analytical process with predetermined themes derived from literature; and even if the researcher has decided on organisational categories beforehand, these neither predict nor determine participants' responses (Corbin & Strauss, 2008; Creswell, 2009; Hood, 2007; Maxwell, 2005). I decided that the "key concepts in the interview questions would form the master codes" (Woods et al., 2002, p. 47).

Coding began afresh using the interview questions as initial codes (Appendix 7). This resulted in four overarching themes: Effective approaches for EAL students; Learning about second language acquisition; Measuring success; and Why support language in class. As the coding process continued, I used the annotations feature of NVivo to write analytical memos about key features. This resulted in identifying two additional codes entitled: Sharing responsibility for language teaching and The nature of the subject.

Further data from the subsequent case studies were gathered and coded, and annotations were added to capture emergent themes and provide reminders of my initial impressions. Constant comparisons were made between existing and new data to establish the extent to which the teachers' ideas were captured within the existing themes (Bazeley, 2007; Corbin & Strauss, 2008; Eisenhardt, 2002). The codes or themes arising from the data were represented in different ways such as on a case survey chart (Gillham, 2000; Merriam, 1988) and graphically in order to conceptualise the relationships revealed by the analysis (Creswell, 2005; Hood, 2007; Maxwell, 2005).

Subsequent gathering and coding data followed similar cycles. Within each cycle of data collecting, it was necessary to search for 'disconfirming evidence' and rival explanations for the results in order to either rule them out or adapt the emergent theory to them (Yin, 1994). Nonetheless, the data fell within the framework of six codes generated by the questionnaire and interview questions.

Properties and dimensions

This research was confined to an embraceable number of seven cases (Stake, 2006) and to a two-year data collection phase. Data were gathered and analysed for several cases concurrently with the objective of exploring the properties and dimensions of each code (Eisenhardt, 2002). The number of cases was pre-determined based on teacher availability and data collection constraints, and the codes were substantive or descriptive, grounded in the interview questions (Maxwell, 2005). While these codes were driven by the interview questions, the dimensions of each code were determined by participant responses. Charmaz (2006) advises researchers to consider the defining properties of codes, and this was a useful technique to address degrees of fit within each category. The next chapter graphically captures the concept of dimension by using a series of continua.

This process or demarcation within codes led to unanticipated and theoretical understandings, as illustrated by the following example (Maxwell, 2005). This study reveals that teachers' beliefs and practices were driven by whether they teach hard or soft subjects. This insight developed as a result of how disciplinary characteristics defined the borders of each code. For example, teachers of hard subjects recommended giving EAL students plenty of time to practise subject skills independently, whereas teachers of soft subjects felt that plenty of student interaction would be the best approach to take for language learners. These attributes represent opposite ends of a continuum and therefore mark dimensions within the code *Effective approaches for EAL students*. Polarisation of responses defined by the nature of a curriculum area was a notable feature within each of the codes. This distinction became apparent as a result of the coding process despite not being obvious to me during the initial data analysis, when I had not considered hard-soft characteristics.

Synthesising mid-range theory

The next stage of generic inductive data analysis is the synthesis of a mid-range theory that explains the relationships between emergent categories and posits answers to the original research questions. The code of *The nature of the subject* led me to look closely at what the teachers believed to be characteristics peculiar to their discipline and the preferred teaching approaches that followed these beliefs. As a result, I coded the data again according to whether the teachers revealed a preference for *Knowledge-related* or *Socially-related teaching* and compared this to what they believed about a *Focus on language*. This provided the conceptual framework for both data analyses (in Chapters 4 to 6) and the subsequent discussion chapters.

My next step involved interpreting the data by conducting two "theoretically connected" explanations (Berg, 2009, p. 341). In Chapter 5, I used a theoretical framework arising from hard-soft divisions to analyse two cases consistent with a constructivist focus on how participants make meaning within their own context (Charmaz, 2006). In Chapter 6 I took a

complementary approach, using principles from language teaching research as a framework for data analysis. The following chapters then teased out the implications of these trends.

To summarise, the process of analysis used in this study fits within the parameters of an inductive qualitative approach, particularly in the way that data were revisited repeatedly, recoded at least three different times and examined using two different theoretical frameworks. Revisiting the data was done to reflect the research process and explore the emerging and unexpected links between the data and literature. The resultant theory is interpretive as well as being grounded in that it aligns to what Charmaz calls (2006) "a conceptual analysis of patterned relationships" (p. 181).

Use of NVivo 8 software

Using computer software to assist the storage and analysis process proved to be a mixed blessing. Kelle (1997) and Corbin and Strauss (2008) advise against viewing computer software designed for qualitative analysis as a silver bullet. Kelle (1997) warns that at each step of the analytical process, "the role of the computer remains restricted to an intelligent archiving ('code and retrieve') system, the analysis itself is always done by a human interpreter" (p. 7). McLellan, MacQueen and Neidig (2003) agree, cautioning researchers to "remember that what is transcribed, what is not transcribed, and how the transcript is structured very much influences the analysis process" (p. 74). However, Corbin acknowledges that computer programmes give researchers the flexibility to readily move and track materials, especially at the early stage of their analysis. Furthermore, programmes like NVivo 8 provide transparency and reliability to the data analysis. What they do not do is perform the analysis. Patton (2002) discusses this further:

> Analysis programmes speed up the processes of locating coded themes, grouping data together in categories, and comparing passages in transcripts or incidents from field notes. But the qualitative analyst doing the content analysis must still decide what things go together to form a pattern, what constitutes a theme, what to name it, and what meanings to extract from case studies. (p. 277)

Bazeley (2007) urges researchers to thoroughly familiarise themselves with potential qualitative software before embarking on a project. I followed his advice but felt that it was not easy to anticipate the aspects of the software that would support my analysis until I was actually ready to conduct the analysis. In fact, despite attending several courses on the use of NVivo applications, I continued to feel removed from the electronic copies of data. For some time I performed two simultaneous analyses: one manually, using paper printouts of the data, and another electronically, using NVivo software. In order to achieve a visual and tangible overview, I followed Gillham's (2000) advice and plotted the development of codes in large charts on A3 paper in what Merriam (1988) calls a "mega-matrix" (p. 155). This allowed me to get a sense of the (literally) big picture relationships amongst the data. However, once it was time to write the case study report, the electronically stored data were readily retrievable, and more complex relationships could be displayed using NVivo features.

Ethical challenges to writing individual case analyses

Proponents of multiple case studies such as Patton (2002), Winegardner (2007) and Yin (2009) suggest that researchers should analyse the trends from each individual case independently and in rich detail. The researcher should first consider the particularity of each case (Patton, 2002). Only after the individual analyses are complete should the researcher look for cross-case similarities and differences. I planned to follow this process until it proved untenable for ethical reasons.

The cases were drawn from a limited geographical region in a small country. The participants work in the same educational community as each other and me. Furthermore, as described above, the participants were selected through relationships developed within this community. When designing the study, I naively expected that because the participants were purposively chosen for their perceived professional expertise, a discussion of their

practices would consist of positive criticism. If any negative criticism arose, using pseudonyms would protect their identity.

As the case analysis proceeded it became apparent that some of the teachers' practices did not align with the perspectives of best practice for language learning, and I grew uncomfortable at the prospect of deconstructing and critiquing their teaching practice. I was conscious that I had been granted free access to the participants' professional lives and concerned that they might feel betrayed by my comments. I was not confident that their identities would remain confidential when there was only one member of each curriculum community in this study. What had previously appeared to be a strength of the study, the breadth of curriculum areas included and the sense of subject specificity, now appeared to be a significant factor in identifying and possibly undermining participants professionally.

Fortunately, an alternative analytical structure is available to researchers using case study methodology. Merriam (1988, p. 156) describes this as a *case survey* which builds "substantive theory by offering an integrated framework covering multiple cases." Similarly, Yin (2009), while generally advocating the disclosure of participants' identities in order to fully exploit the depth and particularity of information that case studies offer, admits that there are occasions when lack of attribution is insufficient protection. He continues:

> For multiple case studies, a third compromise would be to avoid composing any single-case reports and to report only a cross-case analysis. This last situation would be roughly parallel to the procedure used in surveys, in which the individual responses are not disclosed and in which the published report is limited to the aggregate evidence. (p. 182)

This eliminates any reporting on individual cases and enables each section to deal with a particular theme of relevance to a number of cases. Such an approach enables the identity of each case member to remain protected, while still drawing on individual data to arrive at

the common category. I decided that this would be the safest way ethically to shape the reporting process for this study.

Evaluating a qualitative study

It is important that any study is evaluated according to its underlying research methodology paradigm. This chapter has demonstrated that the methodology used to answer the research question fits within a social constructivist, interpretive paradigm. Although there is debate about how best to assess the rigour of qualitative studies (Morse, Barrett, Mayan, Olson, & Spiers, 2002; Rolfe, 2006), Guba's (1981) overarching idea of trustworthiness seems most fitting. Trustworthiness includes other qualities necessary for rigour in research such as: dependability, credibility, transferability and confirmability (Creswell, 2009; Shenton, 2004).

- ***Dependability*** (or reliability and replicability in quantitative terms) is achieved in this study by repetition logic (Yin, 1994) or repeating the same procedures across all cases. The steps taken during the research process are "logical, traceable and documented" (Schwandt, 2007, p. 299). This was achieved by ensuring that all the participants completed the same questionnaire and using interview prompts to cover the same major issues in each case.

- ***Credibility*** relates to ideas of validity or authenticity (Creswell & Miller, 2000). These criteria were met by triangulating data from different participants and sources (interviews, observations and artefacts). In addition, all transcripts went through a process of member checking. Yin (2009) suggests that the researcher establishes credibility by creating and reporting a clear chain of procedural and analytical evidence. This is important where there is only one researcher involved in analysis. Furthermore, Flick (2007) reminds the researcher to check for "strong, logical links between the gathered data and your argument and analysis" (p. 20). Connections to link data,

literature and my analysis are described and justified throughout this study, supported by artefacts in the appendices.

- Denscombe (2007) includes the notion of ***confirmability*** as another significant aspect of validity. This is where I acknowledge that my own experiences and beliefs are part of the research process, in direct contrast to approaches taken by positivist and quanitative researchers who believe in discrete objective knowledge and that it is possible to separate themselves from the subject of their enquiry. In order to carry out this study it was necessary for me to play an active role, for example, in selecting and interpreting data. In fact, it is not possible for the researcher to be objective in a qualitative enquiry.

- Degree of ***transferability*** *or* ***generalisability:*** Case studies tend to be more ***particular*** than generalisable, although a limited degree of generalisability is achieved by aggregating data from all cases. The purpose of using case study methods is not to generalise but "The aim is to illuminate the general by looking at the particular" Denscombe, 2007, p. 36). It is, however, possible to *transfer* insights gained to similar educational contexts.

Limitations

This chapter explains the logic of using case study methodology in response to the research question which asks *how* human participants (teachers) respond to a particular phenomenon (combining their curricular discipline with the additional discipline of teaching English language learners) in their particular (classroom) context. The complexity involved in providing a trustworthy analysis of data concerning beliefs is acknowledged. Limitations relating to the researcher's role and the extent to which others can extrapolate from these data need reiteration.

1. **The role and positioning of the researcher:**

I have worked in this geographical region for more than 10 years as a secondary teacher and, for the past five years as a secondary ESOL advisor and lecturer in education. I have conducted PD to raise awareness of issues relating to literacy and English language learners in a diverse range of schools which means that I have played an advisory role with large numbers of curriculum and ESOL teachers. I liaise with representatives from the Ministry of Education about TESSOL scholarships in the region and teach the first compulsory postgraduate paper taken by TESSOL scholarship recipients. As explained earlier in this chapter, I also used contacts from the ESOL community and the school support services community to identify prospective participants to recruit for this project. These relationships potentially grant me authority in the teaching community which may affect the way participants interacted with me.

However, this study demonstrates how the status of ESOL in schools (relative to the status of other subject areas) militates against any possible power difference. There was no pressure on teachers to participate, and I was careful not to approach teachers with whom I was currently working. Furthermore, curriculum teachers place more value on expertise in their curriculum areas than that of less-defined subjects like ESOL, so the stakes of participating in this study were relatively low for these teachers.

Given that this is a qualitative study, it is important to acknowledge potential interpretive bias from the researcher. My beliefs have been shaped by my own prior learning in the fields of literature, education and applied linguistics as well as my employment history as a teacher and head of ESOL, and before that, a teacher of curriculum English, art history and social studies. Throughout this study I clearly state my perspective that learning takes place constructively through and because of language. Also, having been a teacher, I understand and respect the professional

expertise required to promote learning. Even so, my interpretation of approaches taken by teachers of hard curriculum areas may be affected by my own disciplinary predispositions since their content pedagogy often differs from my own.

2. The limitations of the data:

At an early stage of this project, I considered gathering student data as an additional means of triangulation, but on reflection limited data collection to that generated by teachers. This decision was taken because using multiple data sources from each teacher generated rich data, and adding more may have made the study unmanageable. An unintended negative consequence was that although interaction between teacher and students emerged as a distinguishing factor between soft and hard subject areas, it was not possible to conduct a microanalysis of classroom interaction (using such tools as discourse analysis) since only one side of the interaction (the teachers' voices) was available.

It is important to reiterate that despite my seeking teachers from different curriculum areas, individual teachers cannot be positioned as representative of their discipline. Instead, each provides a snapshot of a teacher's beliefs that may or may not be shared across a discipline. One observation and one or two interviews per teacher provided rich detail about individual teaching occasions but was this representative of that teacher's beliefs and normal practice? It is possible that teachers shaped their behaviour to accord with what they perceived were my interests. On one occasion in particular I believe that a teacher changed her normal practices as a result of a conversation with me. In the interview with her, I observed how affixes strongly affected word meanings and asked her directly about whether she highlighted this to students. She said no, that students were not open to this kind of focus on language, yet in the subsequent lesson she made a point of talking about affixes. If a teacher was willing to adapt her practices for the researcher's benefit, it is also possible that teachers omitted practices that were a normal

part of their repertoire. An example of this was when a teacher assured me that she always used group work but I did not see evidence of it. Further study is necessary to confirm or disconfirm the generalisability of these findings. Nonetheless, the confirmability of my findings was strengthened by applying a cross-case analysis which revealed soft-hard differences that accord with the literature (Noor, 2008).

I regret that I could not recruit an English teacher to participate in this study. English teachers occupy a unique place in secondary schools in that they are not only expected to be curriculum experts, but are also viewed as knowledgeable about teaching language and literacy. Expectations of their expertise in teaching literacy and language may sometimes be unfounded, as teachers' knowledge about language is affected by their academic qualifications, and English degrees may be largely composed of literature papers. I was eager to hear an English teacher's views on their default position as language teachers and this interest was partially fuelled by my own experiences as an English teacher.

Another hazard relating to participants is that the geographical region where the study was conducted is small and the community of secondary teachers is relatively close-knit. This can make it difficult for participants and their schools to maintain confidentiality about their participation in a study. The ethical issue of how to maintain participant confidentiality, while critically examining teachers' practices, is discussed at length in the data analysis section of this chapter. It also provoked me to reconsider how best to apply a multiple case study approach in order to interrogate the data while respecting teacher confidentiality.

3. **The limitations of the implications**:

This case study was bounded by curriculum area, curriculum level, student demographics, geographical distance, and participant availability. In other words, it was set in a very specific socio-politico-educational context and thus risks building "narrow

and idiosyncratic theory" (Eisenhardt, 2002, p. 30). For this reason it would be unwise to generalise any conclusions to other educational contexts, Nonetheless, even given that "knowledge cannot be formally generalised does not mean that it cannot enter into the collective process of knowledge accumulation in a given field or a society" (Flyvbjerg, 2006, p. 227). Indeed, my interest in this area of study was piqued by other case studies conducted in different schools and countries with different participants and student bodies. So, despite the implications of this study relating to the New Zealand secondary context, it is expected that they might also hold value for other educators, and provoke them to consider the situation in schools elsewhere.

Summary

The objective of this research is to enhance current understandings about the teaching of language learners in mainstream curriculum contexts. Language learning and teaching takes place in a socially constructed context. The case study approach used to investigate teachers' beliefs and practices enabled the research questions to be explored in a manner that best fits my socio-cultural perspective. Furthermore, as illustrated in the following chapter, case study methods allow sufficient flexibility for me to respond to emergent themes.

The following three chapters analyse the data from this study using three complementary constructs. Chapter 4 employs a cross-case approach to describe the main themes emerging from questionnaire, interview, artefact and observational data across all cases. Chapter 5 uses the cross-case findings to conflate data into two composite cases according to whether teachers work in hard or soft disciplines. Chapter 6 uses a conceptual framework derived from research into effective language teaching through the medium of school subjects and analyses the data from this perspective.

4. Findings:

How do teachers describe teaching practices that they believe lead to learning for EAL students?

This section sets out the descriptions offered by the seven participants of what they consider to be teaching practices in their curriculum areas that lead to successful learning for EAL students. It justifies the guiding questions used in the questionnaire and interviews with each teacher, and then analyses the teachers' stated beliefs under four main headings. These headings are: the nature of their subject; teachers' ideas about how to teach EAL students well; their understanding of second language acquisition; and their views about taking responsibility for language teaching. It demonstrates that the teachers' approaches relate closely to their perceptions of good teaching in their curriculum area but less to understanding how students learn additional languages in the context of a secondary school.

It is traditional for qualitative researchers to perform multiple-case analysis by first conducting a case by case analysis to enable a rich description and thematic exploration of each case (Patton, 2002; Yin, 2009). Researchers subsequently conduct a cross-case analysis where recurring and overarching themes are identified, but only after individual cases have been investigated. This approach to case study methodology seemed an ideal way to identify good teaching practice and so I recruited teachers who were considered by their principal and/or peers to be expert practitioners with the intention of studying the beliefs and practice of each one in detail. However, as explained in Chapter 3, once data gathering and preliminary analyses were underway, it became apparent that expertise in disciplinary teaching did not necessarily translate into teachers understanding how students might best learn language in the context of a subject classroom. Since the purpose of this investigation

was to identify teaching practice that exemplified the combination of content and language teaching, not to highlight flaws in teachers' practice, I judged that individual case description would not be effective in achieving this end. In fact, any individual teacher weaknesses in combining these disciplinary skills would be starkly revealed by examining each data set separately. I did not wish to detract from positive examples of teaching that might be apparent using a cross-case thematic examination of data. For these reasons, in addition to the ethical consideration of preserving teachers' identity in this geographically limited educational region, I chose not to pursue a case by case description and began to look for an alternative way of reporting the findings from my study. Yin's (2009) notion of the cross-case survey seemed the most suitable response to these methodological concerns.

Data from the participants' transcribed interviews and questionnaires were analysed across the seven cases to extract common themes from their responses. This cross-case analysis began with the guiding questions used in the first semi-structured interview. The probing interview questions were drawn from research on second language learning in the context of a mainstream curriculum area and sought to reveal teaching beliefs that aligned with current views of effective teaching approaches for secondary school EAL students. For example, Walqui (2000) lists ten guidelines for mainstream teachers of EAL students. These include: fostering an inclusive classroom community of learners; including both conceptual and academic language teaching; using students' experiential background as a foundation to new learning; maintaining a focus on substantive ideas using a cyclic structure; contextualising new ideas; explicitly teaching academic and socio-cultural strategies and expectations; making tasks relevant and varied; creating opportunities for learners to use language and content collaboratively and meaningfully; providing numerous opportunities for students to apply their understandings; and making authentic assessment central to the process of learning. The research-based interview prompts (Appendix 6) were visible to the participants throughout their interviews and shaped the resulting answers.

Analyses of good practice for teaching English language learners, reiterated by researchers into content-based language instruction in schools, remind the reader that there is always a dual purpose to the instruction: "the learning of a second language and mastery of content knowledge" (Brinton, et al., 2003, p. 182). The achievement of a balance is the crux of this project. I wanted to know whether and how teachers balanced instruction in these two diverse areas. The participants were probably expert practitioners within their discipline, but did they commonly use any of Walqui's (or other educational linguists') recommended approaches?

Prior to engaging in the semi-structured interview, the teachers completed a questionnaire which further guided their thinking towards possible approaches to teaching EAL students. They assessed their degree of confidence in using various aspects of language teaching through Likert scale ratings and short answer questions (5). At first, I tried coding using the questionnaire items as my categories, and then to gain a different perspective started again with the interview prompts. Both exercises resulted in considerable similarities across eight or ten categories. It was evident that there was significant overlap between the questionnaire and the interview questions and that both aimed to elicit information about practices such as those described by Walqui (2000). The strong link between the questionnaire and interview was made even more apparent because three participants chose to complete the questionnaire while they were being interviewed so that their reflections on the questionnaire were captured on tape. To summarise: the questionnaire and interview prompts shaped the participants' answers and I used the interview prompts as my first codes.

Furthermore, and perhaps unsurprisingly, the participants' most pervasive experiences and beliefs were revealed as centring on their experiences as subject teachers. As a result, I conflated several coding categories and added a new one which resulted in four dominant

themes: The nature of each teacher's curriculum area (or subject) and how it is taught; their ideas about effective teaching of EAL students; the teachers' understanding of second language acquisition (which includes any PD and academic study); and finally, their views about taking responsibility for language teaching.

The relationship amongst these themes is represented below in Figure 3. This conceptual framework shows that the teachers' beliefs about teaching always appeared to begin with the "conceptual context" of their curriculum area (Grossman & Stodolsky, 1995, p. 5). Their beliefs about teaching EAL students and any professional learning relating to teaching EAL students appear to be adjuncts to, rather than an integral thread throughout, their professional decision making. These beliefs appear to be formed by the nature of their subject and not informed by their understanding of how students learn a new language in an immersion, school environment. The relative size of each box shows the dominance of the teachers' curriculum experiences in comparison to the beliefs they express about teaching EAL students. Also, the beliefs about teaching EAL students are coloured by their beliefs about teaching their curriculum area.

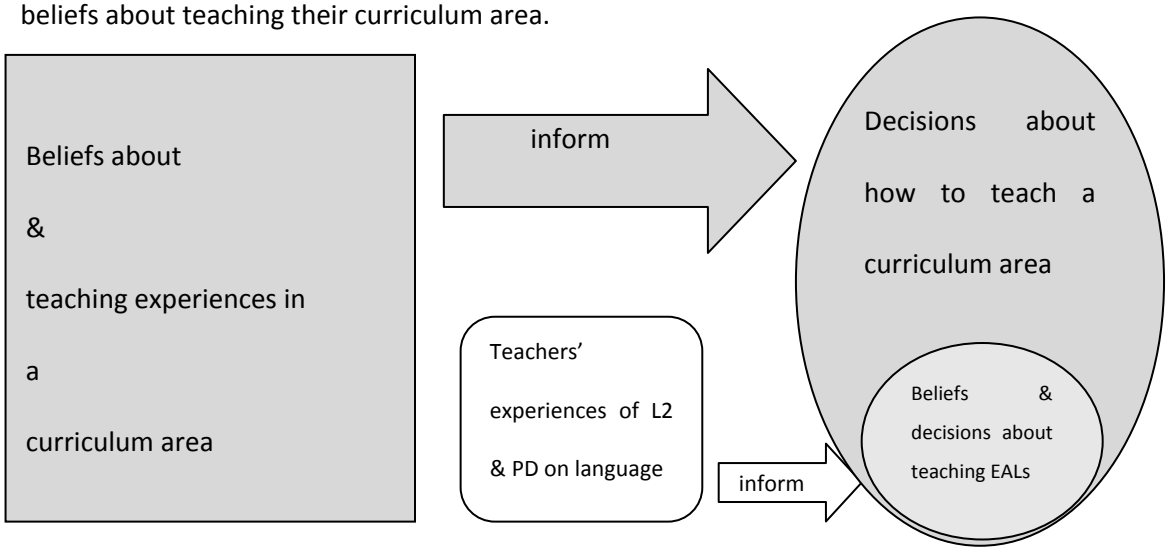


Figure 3: The relationship between teachers' disciplinary knowledge and their learning about teaching language

This chapter covers each of four emergent categories. For each one, participants' responses are situated along a series of continua in order to establish the limits of each concept.

Exploring the range of responses within each category both shows how each teacher positions him or herself within the category and clearly demarcates the dimensions and properties of the category (Corbin & Strauss, 2008).

The nature of each teacher's curriculum area and how it is taught

A defining characteristic of most New Zealand secondary schools, differentiating them from primary schools, is that students study a number of different subjects rather than follow an integrated programme of instruction. The teachers of these subjects are graduates whose university degrees focused on particular specialist curriculum areas. This course of study was followed by one year of teacher education addressing generic and pragmatic teaching practices. Given the relatively extensive time spent in learning their discipline, it was not surprising that the teachers in this study repeatedly emphasised the peculiar nature of their subject area when discussing their approaches to teaching EAL students. Indeed, although the interviews revealed some cross-disciplinary ideas about what good teaching might entail, it was clear that many teachers' beliefs were closely bound to their beliefs about what it means to be the teacher of a particular subject.

The notion of subject-specific pedagogy, as posited by Biglan (1973a), arose during the first interview when the first participant explained a number of his decisions by saying that they resulted from "the nature of the subject". As data collection continued, it was soon evident that the teachers considered that the nature of their subject directly impacted upon their pedagogy (Lindblom-Ylanne, et al., 2006; Neumann, et al., 2002; Oolbekkink-Marchand, 2006). Teachers' comments about their teaching approaches both positioned them in relation to one another (subject to subject), and also appeared to inform their opinions about how EAL students need to be taught. Teachers applied subject-specific approaches to teaching EAL students as opposed to adapting approaches from applied linguistics or educational linguistics to their subject.

This idea of defining best practice for teaching EAL students from the viewpoint of what is required to achieve in a subject area was of interest to me because of the contrasts to approaches arising from theories of how young adults learn an additional language at school. The participants were approaching the teaching of EAL students from the opposite direction to my own in that they appeared to separate the subject matter from language forms used to capture it. I was curious about how this translated into practice.

One of the subject-specific areas that positioned teachers was the idea of teaching sequentially (Grossman & Stodolsky, 1995).

Sequential or non-sequential subjects

sequential……non sequential

There was a perception by the teachers of science and mathematics that the subject matter needed to be taught in a linear and sequential fashion. If the subject was considered to be sequential, this had a number of implications for learners. These teachers explained that they carefully 'structured' their courses and developed 'routines' within each lesson where the content was broken into chunks or steps then taught sequentially. These subjects were characterised by the way the teachers clearly defined criteria for entry into year 12 and commonly referred back to students' performance in year 11 or earlier to establish students' prior subject knowledge. Teachers of these subjects also informed their teaching by checking students' grades from the previous year's national assessments through NCEA:

> I've taught most of them before anyway, so I've got a really good picture of them. I've seen what their results are from last year. I get their results and have a look at those. (Interview)

They also recommended that EAL students should stay in a lower level class until they acquired the prerequisite knowledge for entry into year 12:

> If they [EALs] come in in year 12 we will generally put them into year 11 first. (Interview)

Or, phrased more strongly:

> If they've never done level one … we'd say no, and we as a faculty try to weed them out. (Interview)

It was not desirable for an EAL student to enter year 12 in a sequential subject without having mastered the concepts taught in earlier years.

A strong distinction was made between unit standards courses (perceived to be less academically demanding) and achievement standards courses (perceived to be more academically demanding). Often schools streamed their students of hard subjects by running two levels of classes: unit standard classes and achievement standard classes.

> We have a unit standards class and an achievement standard class and it may be that their [EALs'] language needs will keep them in the unit standards class. (Interview)

Teachers of hard subjects expressed concern and unease if senior management in their schools overrode the expected sequential conditions of entry into their subject:

> I've written 'Strongly agree' [that EALs are capable of gaining success], but there is a qualification there, because I have some students that have been put into the class who have not got Level one. And so, I agree that they are capable of getting some success, but they're not going to get that much success in certain areas of Level two, because if you can't do Level one algebra, then getting Level two is… is a huge ask. (Interview)

In these subjects there was an awareness of pacing the content delivery so that a certain amount of content was taught before students progressed to year 13. Both the teachers of science and mathematics were very conscious that they needed to cover a certain amount of work or assessments in a particular timeframe.

Softer subjects, such as those belonging in the areas of social sciences and commerce[12], took the opposite approach to both placing and managing the learning of students in their courses. There was more likely to be open entry into year 12, and, in the case of religion,

[12] This study will use business or commerce to include accounting and economics

the subject was compulsory throughout the school so students were placed in classes according to their general curriculum level and age. Entry to commerce and humanities subjects was open and teachers expected students in their classes to vary in subject proficiency:

> If they [EALs] come in at year eleven, they're no better or worse off than anyone else who's picked up [this subject]. (Interview)

A flexible approach to student placement was also illustrated by the fact that some teachers were willing to consider allowing students to skip one curriculum level in their subject:

> It was suggested to me I shove all the [year 12] non-English background students straight into level 3. (Interview)

Moreover, others were happy to extend a year 12 course of study over two years:

> There is nothing wrong with completing half a unit of work and picking it up the following year and completing it. (Interview)

Even at the lesson level this flexible attitude was also evident:

> I'll slow it down and reiterate it and go over it and repeat it and come at it from different angles so, like, adjust the pace of the lesson. Sometimes I'll spend a couple of periods not going very far at all, but only so they get a real understanding of what the thing is that we're looking at. (Interview)

Some of the teachers consciously positioned their subject in relation to hard subjects. More than one teacher made links between science, mathematics and commerce subjects:

> Level 3 [of my subject] is more numerical and, from what I understand, quite a few of the students in my class were fairly strong in the mathematical areas and so tables and calculations and they clicked to that straight away, so [placing EAL students directly into year 13] might work… So it allows them to bring their own prior learning and understanding and knowledge where the New Zealand [year 12] course doesn't. (Interview)

In these ways, placement and advancement of EAL students appeared to be dependent on the flexibility and degree of sequencing preferred by a particular subject.

Perception of the status of their subject

Low status……high status

Another positioning factor was status, or the value that teachers perceived to be placed on their subject (Grossman & Stodolsky, 1995). One teacher did not perceive his subject as having high status and remarked that in the *applied* but relatively *hard* area of technology:

> Institutionally or historically, it's probably perceived as somewhere where boys can go and make something with their hands. (Interview)

His class, which concentrated on internally assessed unit standards, contained relatively few EAL students in contrast to that of another participant teaching business, who noted:

> Of course the principal doesn't want [this subject] to die …because it's an attraction to overseas students which are an income stream for the school. They want to know that there're commerce subjects to take. (Interview)

Teachers of commerce subjects were aware that their subjects are perceived by parents of EAL students (both fee-paying and migrant) to have potential professional value and to provide entry to university education. Both commerce teachers remarked that their subjects were a popular choice:

> That's just the nature of [my subject]. You can come to any of my classes and you will see probably half to possibly two-thirds Asian and of that, there is possibly half of those again that would be ELLs. The others would be New Zealand born… (Interview)

They also noted that the parents of their students were likely to have influenced the subject selection of their children. It seemed, therefore, that high status subjects that provide pathways to university study (such as commerce, mathematics and science) were likely to attract high numbers of EAL students and bring their learning demands to the attention of these teachers.

Teachers believed that a range of issues affected the way their subject was valued. Compulsory subjects seemed to lack prestige in the eyes of students:

> As a core subject the interest level isn't always there. (Interview)

Even elective subjects might be chosen not strategically for the value to students in their future careers or in preparation for further study, but for convenience resulting from a gap or conflict in their timetable. Teachers felt that students making choices for convenience were less likely to be highly motivated or successful:

> I think a lot of the times it's like [they're] saying, oh, what other subject am I doing? I'll do the automotive one, you know? As opposed to, I'm really interested in cars and motors. (Interview)

Students also might not select a subject at which they excel for non-academic reasons:

> There's heaps of students [at my school] which make great commerce students that I've had in the junior school and the other aspect is that… if your school offers a range of subjects… it dilutes the numbers available in the traditional lines …because you've got other things like Journalism, Media Studies, Outdoor Education. Great subjects, they don't necessarily lead to higher level things… but they're much more fun than hard core academic stuff and what happens is some of these kids… pick the fun things. (Interview)

So, while teachers (especially the commerce teachers) had a general sense that their subject was valued (relative to others) in the wider school and community, they also appreciated that other influences were at play.

The teachers' ideas about effective teaching of EALs

The ultimate aim of all these teachers of year 12 learners was that their students would acquire sufficient mastery of the subject to undertake independent, individual summative assessments in NCEA. The participants explained how they preferred to prepare students to achieve this degree of subject proficiency. Again there was a range of responses that distinguished between teachers of hard (science/mathematics/business/technology) and soft (social sciences) subjects. In line with tertiary research (Neumann, et al., 2002, p. 406), the teaching approaches described by these secondary teachers can be generally described as "knowledge related" or "socially related". The knowledge-related approaches tended to focus overtly on the extent to which students should learn by working independently (with support from the teacher) and by attending to the teacher (Lindblom-Ylanne, et al., 2006, p. 294). These contrasted with the socially-related or knowledge-building approaches

(Neumann, et al., 2002) which favoured students learning interactively and inductively. Generally, these approaches relate back to whether the subject might be construed as hard (mathematics, science) or soft (humanities and commerce).

Technology is more difficult to categorise in that most studies about the characteristics of curriculum areas have been carried out in universities where the closest subject to automotive is probably engineering, a hard subject. Automotive engineering is clearly an applied subject (Biglan, 1973a), parts of which relate to processes (welding, assembly):

> Technology's such a weird subject in that it's a whole lot of things; so there are a whole lot of things that would be considered technological activity. (Interview)

Processes tend to be taught sequentially, so this subject is best interpreted as hard. However, the approach to teaching automotive is probably softer than that of engineering as the teaching of technology has become less trades-centred, and more flexible and learner-centred.

Generally, the teachers were conscious of their preferred teaching approaches for EAL students and able to discuss these in relation to their subject. Two teachers differed from the others because there appeared to be a disconnection between their stated beliefs and stated practices. Both saw themselves as teachers who placed a high value on student interaction and yet during the observation phases of data collection, it was clear that both really interpreted student interaction to mean students interacting with the teacher. The other participants appeared to achieve more consistency between their stated approach and the ways they described achieving it.

Knowledge-related teaching or socially-related teaching

knowledge related……socially related

Several teachers took complete responsibility for the learning in their classes and in this way positioned themselves as the main 'knowers'. These teachers favoured a teacher-initiated approach and when they grouped students, tended to do so for logistical reasons that is, to manage the use of equipment such as welders, computers, small white-boards or laboratory equipment:

> I'll do the teaching, and then I'll come and sit with her, and just do something one-on-one. And she's got to the stage now where she will ask a question, so I think that's good. (Interview)

> I chat one-to-one with X all the time so that she understands. (Interview)

> They're doing it essentially individually, but they are pairing up, really. There are enough computers down there that they can, so it's different with different kids; some kids will prefer to do it by themselves, others will sit together and do it. And I'm happy with that. (Interview)

All of the teachers told me that group work, or socially-related teaching, would benefit EAL students. Teachers of soft disciplines prioritised group work and the teachers of hard disciplines did not:

> I could do a lot more in designing group activities and what have you, but I'd run out of time. (Interview)

The teachers of softer disciplines were more committed to the benefits of group work, although most did not differentiate between EAL and mainstream learners:

> In a group of 3 or 4 kids they've got so much more to-ing and fro-ing and discussion that's helping develop their understanding. So it's a chance to talk, ask questions and it's maybe less threatening, less high stakes, you know. (Interview)

The participants were not certain about whether it would benefit EAL students more to be grouped together or dispersed amongst different groups but generally made a decision for affective reasons, so that the students felt comfortable and safe in the classroom. They appeared doubtful about which option would be more helpful in promoting language

acquisition and at this point deferred to the opinion of the ESOL staff or distanced themselves from their opinions, for example saying: “People say they learn well that way”.

Time and practice

Group activities were considered an ideal way to allow students extra opportunities to engage with the subject matter, but most teachers believed that it was critically important for students learning an additional language to have more time and/or more intensive instruction in their subject. This would enable students to practise the skills of the subject. In order to allow students extra time and additional practice, some teachers recommended giving new learners of English a ‘double dose’ of their subject. This was achieved by timetabling students so that they took two levels of the curriculum area simultaneously:

> The thing that has helped me to agree to leave her [the EAL student] in this class, is the assurance that she would do level one … at the same time. (Interview)

And

> by giving them a half a year of year twelve, they basically do the year twelve work in my year thirteen class AND my year twelve class giving them twice as long to do everything they need to do, and double exposure to me. (Interview)

Other teachers offered additional classes at lunchtime or during ESOL class time:

> The homework club is another way that they [EAL students] can get this information as well. What I requested some of the students to do… after that first test is to go to that homework club … and get some of those senior students to go through some of those words and … answers and that sort of thing, and I’m doing that as well. But maybe sometimes it’s easier to hear it from someone who’s from their own country. (Interview)

This teacher stood out for his interest in affording multiple opportunities for EAL students to encounter his subject matter in class, out of class, with the teacher, and with other students.

Peer tutoring

Peer tutoring was strongly advocated by four teachers with a socially related perspective of teaching. These teachers commissioned peer experts to support other learners in the class and check their work. One noted that the student experts varied from unit to unit and:

> It helps [EALs] if they can support someone else in the classroom, and usually the tables have turned and they are helping someone who is not an ESOL student … so it's a great confidence booster. (Interview)

Peer tutoring was set up both within class time and also outside class time, particularly during lunch times:

> I've got these year 13 students doing accounting and they are very keen to help those students who are struggling with accounting, whether they're ELLs or not…interestingly enough, the students who are keen to run this programme are ELLs themselves. (Interview)

While of benefit to EAL students, these sessions did not target language learning specifically. This approach was developed to suit how this teacher perceived learning in his subject occurred rather than to develop effective practices within a language learning framework. Other participants organised similar sessions but where peer-tutoring was subordinate to the teacher's tuition:

> They're very reserved … so I've let them work together, but that just means that I have to spend a lot more time with them. (Interview)

In other words, if the teacher could not get around all the learners, he would provide them with support from a buddy. He did not expect the peer support to be sufficient scaffolding for EAL learners.

Use of the first language

discouraged ……..tolerated……..encouraged

Most participants expressed an opinion about whether use of their first language (L1) in class would help or hinder EAL students. Opinions ranged from gently dissuading this practice, to condoning translation, to considering the use of L1 to have academic benefit;

they did not discuss the relationship of the L1 to the students' prior learning. This teacher was an exception in that she believed that students needed to think first in their stronger language before translating those ideas into their second language:

> You know, teach them what we're doing, but get them to speak in… their own language first, get them to come up with some ideas on how they'll speak in English. (Interview)

Several teachers were wary of their EAL students using the L1 because they could not follow what the students were saying. One teacher asked:

> How much is he using these guys as interpreters? (Interview)

Another was even more blunt:

> I think they should be speaking English. It should be about [my subject]. When they are in their own language, it's usually social I think. (Interview)

Even teachers who supported the use of L1 as an aid to learning in their classes were concerned about the long-term effects of EAL students being allowed to continue L1 use in class when all the outputs in the subject had to be presented in English.

> It was clear at times they were trying to translate and understand things by communicating about something because it was faster and more you know, easier to do than to try and blow by blow use English. But it probably wasn't necessarily helping their English development and their ability to actually write answers in English or to communicate answers in English but it may have been helping them understand the concepts. (Interview)

Teachers were aware that there was likely to be a gap between what students were able to express in English versus what they understood and could write or talk about in their L1:

> A lot of them are really good at doing the rote algebra type of thing, but I don't think they can actually apply it. But they might be able to, in their own language. (Interview)

Generally, teachers were tolerant of new EAL students using their L1, but uneasy about how this might impact on their acquisition of English.

What does 'language learning' mean to subject teachers?

The participants knew I was interested in how they supported EAL students' language learning through their teaching. They interpreted the term *language* in several ways, but

the most significant aspect of language appeared to be vocabulary. Vocabulary (discrete terms) was the most commonly recognised linguistic challenge. The next linguistic feature to be identified was the written explanation. Teaching the genre of explanation writing was identified as significant by teachers of both humanities and science subjects as in these subjects students need to construct an explanation to achieve merit or excellence in NCEA. The third theme running through their answers was that both EAL students and students with English as their dominant language (EL1) need the same support in using academic language. This suggested that teachers do not differentiate between the linguistic needs of these two groups. Finally, there was a perception that some topics were language-free and therefore easier for language learners.

Vocabulary

Most teachers' first thought was that language equates to vocabulary. All the participants were concerned about how to teach the technical vocabulary required of their subject. In addition, one teacher discussed the challenge presented to learners when familiar words were used in subject-specific ways. Teachers approached the teaching of vocabulary differently. At one end of the spectrum, a teacher might issue a word list at the beginning of a topic. Several teachers mentioned using word cards where the word was on one side of a flashcard and its definition on the other. At the other end of the spectrum, teachers might try an inductive approach where students were encouraged to look at the components of words, their affixes and roots. This teacher used a word analysis to make links across the curriculum:

> … actually breaking the words down further, or even… if the word means something else or maybe [is]used in other word, like *quad* for example meaning 4, [it] could be used in other words that they may understand from another context such as maths. (Interview)

Another teacher observed that EAL students were likely to have strategies for learning language (and particularly vocabulary) that EL1 students do not:

> If a new word comes into the class, I always try to get them to break it down so they can work out what it means themselves… and often the foreign students will be able to do it much better than our students will, you know. So, you're talking about quartiles and you say, 'What word do you know that's close to that?' A lot of New Zealanders will go, 'Huh?' Whereas, you know, an overseas student will say, 'Quarter.'… I suppose they're going between their language and our language and any other language they know and they get used to looking for parts of words, whereas our students, 'cause they only know one. (Interview)

Generally, however, when I raised the subject of language demands, teachers began to talk about technical vocabulary or 'new terms'.

Writing an explanation

Explanation writing was described as a linguistic skill that students needed to master to earn a merit grade in NCEA. The skill of writing an explanation was seen as demanding that students demonstrate skills beyond the level of memorisation:

> Usually it's the ESOL students that will have a greater problem with this… they often don't personalise their answers to the case study that they've been asked to talk about. They'll generally give a rote-learnt answer. (Interview)

In subjects such as accounting, economics, religion and chemistry teachers distinguished between the levels of thinking underpinning writing a description and writing an explanation. As a result, teachers devised methods of teaching these genres.

One explained that she began by:

> … dissecting the question, having a look at the question and working out what it actually means, highlighting the key words in the question. So they focus on what the question actually means, and then writing bullet points for each of the parts of the question. Now you can't get merit and excellence from bullet points. But it's a starting point for writing sentences and paragraphs. The bullet points can be fairly random, and then we practise putting them together into sentences and paragraphs. (Interview)

Most participants felt that modelling answers was effective for teaching extended (paragraph) writing. One used the school's intranet to ensure that students could access exemplars in preparation for writing. Another tried text deconstruction and broke text into simple sentences then drew attention to how various connectors contributed to meaning.

Many felt that EAL students struggled 'to customise an answer' and that students who had studied in non-Western environments were inclined to use:

> rote-learning of something they've read in their textbook and they're just regurgitating it as an answer, without necessarily applying it. (Interview)

His answer was to formularise the approach to answering questions using mnemonics to remember the steps. He was not alone amongst the participants in advocating role-play as an effective teaching technique, especially when each role play centred on contexts that were highly familiar to the learners:

> Co-constructing context, I guess, is one thing I'm strong on. So, between myself and the students: Let's put this in a context that we can all understand here. (Interview)

Clearly, teachers were aware that explanation writing required explicitly taught skills. Yet they did not construe this as a language-related skill but instead as a subject-related skill.

Teaching the language of their subject to all learners

The teachers were all aware of their responsibility to teach the language of their subject to all learners, but felt it was a wider issue than just teaching EAL students. These comments reflect the widespread belief that learning the language of their discipline was the same for EAL students and other learners, particularly struggling learners.

> I'll do it [scaffold] anyway because for a lot of New Zealanders the language of maths is a second language almost. (Interview)

> Some of the literacy skills in the year 11s weren't that flash, so they could benefit from that [a focus on language]. (Interview)

> By and large most of our kids are not that great with language, and especially not the ones that gravitate towards our subjects. (Interview)

There appeared to be a relationship between this 'one size fits all' belief about learning language and the participants' knowledge about language acquisition.

Language free topics

Where teachers specifically talked about their approaches for teaching EAL students (as opposed to all their learners), some made comparisons between aspects of their curriculum that were linguistically demanding and aspects that were likely to be achievable by new learners of English. They felt that it was sometimes possible to divorce linguistic and conceptual demands in topics that emphasised graphs and formulae:

> It's something where there is very, very little, virtually no language involved. (Interview)

and,

> [Mine] is one subject they can do because, certainly at the achieved and merit level, there's very little words there. (Interview)

Interestingly, these comments were made by teachers of hard curriculum areas.

The teachers' understanding of second language acquisition

Interested in learning about language……language learning irrelevant

The teachers' expertise and interest in language learning and teaching could be described as: deriving from academic study or PD; deriving from personal experience; or not seen as relevant to their teaching. When pressed, they found it difficult to articulate how students should be taught when they do not have English as their primary language but suggested that learning language (grammar) was not likely to engage learners.

Academic study

None of the participants had studied applied linguistics in depth. However, one was keen to acquire more knowledge:

> I really do want to learn, I do want to learn a lot more about ESOL, I've always said that here, I need to teach these guys better, I need to. I can't have them sitting there vacant and doing nothing. Not because they're… they're not low-level, they're extremely talented in their own language, um… but it's just unfair, the way that we're set up for them. So… yeah, I don't call myself an expert, definitely learning. I want to be better at teaching them, really do. I think we're all always learning. (Interview)

Another had been awarded a Ministry of Education TESSOL scholarship (and was concluding his first year of study) (questionnaire). Those teachers with the most recent study and/or the strongest interest in TESSOL expressed the least confidence about how to meet the needs of EAL students. Yet, on the other hand, they both referred to a range of teaching strategies and teaching approaches that had an explicit focus on language learning.

Several teachers had undertaken language-related PD but felt that it confirmed their existing practices rather than bringing up new ones:

> A lot that came out of that I suppose … was really affirming of hopefully what we were doing already. (Interview)

One teacher was actively disparaging of the PD she had been involved in:

> There is nothing, there was virtually nothing on the DVD that we haven't been doing for years. (Interview)

At the opposite extreme, another teacher recognised her limited understanding and wanted to know more about how to support the language learners in her class:

> [It] is a huge thing especially for me because I'm not trained in English, and definitely not trained in ESOL. But such… it's such a need, in every class that you teach… I would like more professional development, perhaps courses from experts and things like that. (Interview)

This teacher acknowledged that a field of expertise relating to language exists in addition to subject expertise. This view was echoed in the comments of another participant:

> I do the best I can given I'm not a linguist or an English teacher. (Interview)

Other teachers did not demonstrate awareness that there was a significant or useful body of knowledge (educational linguistics) that might be available to them.

Personal knowledge

One teacher was currently learning an additional language and discovered what worked for her:

> Me speaking and saying things does work. Listening to other people saying things, I find very difficult. (Interview)

This teacher felt that she needed opportunities to speak and formulate her ideas through the medium of her new language. Her reflections were interesting as they contrasted with the knowledge-related, independent learning approach taken in her hard subject. Interestingly, she did not discuss applying this personal experience of learning a language to her classroom teaching practices for the benefit of EAL learners.

The main lesson that the teachers appeared to have taken from experiences of living in a non-English speaking environment was that it is important to be empathetic and inclusive to EAL students:

> I think this is a very good environment for someone with English as a second language. The boys are very accepting and we have a policy in the school about accepting everyone. (Interview)

Without exception, the participant teachers expressed concern that new students should feel welcome and comfortable on their classes:

> I know the people that are working here really care …, and the [EAL students] are happy, you know, and … you see them out in the playground and they are confident and they are happy. There are 16 different languages here and they are getting around and they are joining the sports' groups and being accepted by the local school community. The culture's right – we've got that box ticked. (Interview)

Affective issues appeared to predominate when teachers spoke of how best to teach EAL students.

Not seen as relevant

Some teachers felt that a focus on teaching language would be the same for any learners of their subject regardless of whether the student was EL1 or EAL. This 'one size fits all' approach may have arisen because teachers were unaware that there is a body of knowledge relating explicitly to learning an additional language. Comments like those below suggest that even without any specific linguistic training, many participant teachers were confident that they had the requisite skills to cope with any of the learners in their classes:

> I [scaffold] for the students who need it and they are not always just language students. There are often students who are not achieving very highly for other reasons. And what I've learned over the years is that… the techniques are all the same. It's about identifying which techniques work best with different people. (Interview)

> I can identify the language demands of my subject **to a great extent.** (Questionnaire)

Interestingly, despite confidence in the questionnaire item above, the teachers were less confident about how to teach language as evident in the response below:

> I know how to teach the language of my subject **somewhat.** (Questionnaire)

Later chapters will explore the extent to which the teachers' perceptions of language challenge and language support fits with research from educational linguistics.

Impressions of what is involved in attending to language

Participant comments suggested that they had formed these opinions about teaching language when they were students at school. One participant explained that a focus on language could be repetitive and boring:

> I guess we're going to have to practise a lot more written English as well… They [EALs] might enjoy it but I hate teaching in that way really. It's sort of like… harks back to my day when we repetitively answered things and checked and you know that almost robotic how to write a sentence, how to write a paragraph, over and over. (Interview)

Another teacher felt it would not be appropriate to focus on the components of complex words. She may have been reflecting on her own experiences as a learner when she remarked:

> I try to drop a lot of that in teaching because that's not common. And it just angers… gets some people a little bit annoyed. (Interview)

Despite limited knowledge of the language acquisition process, teachers nonetheless had formed the impression that a focus on language would not fit with their own ideas about good teaching. Such opinions seemed to have a negative impact on their relationships with their ESOL teaching colleagues whose area of expertise was applied linguistics or TESSOL. Limited interaction with ESOL colleagues may have been exacerbated by the fact that ESOL does not have a curriculum in New Zealand secondary schools and, as a result, may suffer from a corresponding lack of status.

The teachers' views about sharing the responsibility for language teaching

The teachers' varying perceptions of what was involved in learning an additional language impacted on their relationship with the ESOL staff in several ways. Some teachers seemed to suggest that they believed that teaching language learners equated to good subject teaching. These teachers appeared confident that they had the skills to support language learners and thus did not feel any imperative to seek support from their colleagues. Others perceived that teaching students who are learning a new language might involve skills in addition to their disciplinary expertise, and actively sought out their colleagues in ESOL with a view to working with them or learning from them.

Even teachers who professed confidence in their ability to teach the language of their subject varied in the extent to which they took on this responsibility. At one extreme, they were happy that new fee-paying international students of English should be taught intensively in a language school or by the ESOL staff. This could mean either they felt someone else should take responsibility for language teaching, or realisation that the ESOL staff had expertise that they did not. At the other extreme, participants took complete responsibility for teaching the language of their subject.

Passes responsibility……shares responsibility…….assumes full responsibility

The range of opinions offered about taking responsibility for language teaching is reflected below:

- **Send EALs to a language school**

One teacher reflected that beginner EALs were sent to a language school to acquire basic English before joining the mainstream:

> We use the language schools in town as far as bridging courses go. (Interview)

An ESOL department existed at his school but he confessed that he was uncertain about precisely what went on there. He was happy to teach the students when they were placed in his class after the language school/ESOL process.

- **Send EALs to ESOL/withdraw them from class**

Other teachers admitted that there were students whose language needs were outside their ability to meet. These teachers were happy to defer to the expertise of the ESOL specialists in their school:

> He needed intensive [ESOL], probably downstairs [in ESOL department] working on how to write sentences and paragraphs. (Interview)

Such teachers regularly consulted and worked with ESOL staff and appeared to enjoy collegial relationships.

- **ESOL and subject teachers work together**

Working relationships between curriculum and ESOL staff varied. One teacher had worked closely with his ESOL colleagues and experimented with different ways of providing extra subject input with the support of a language specialist. This was a curriculum-initiated arrangement but the teacher felt that the EAL students benefited from receiving simultaneous language and subject support. He regretted that timetabling changes had put a stop to their collaborative arrangement:

> One of the, I think, little successes I can say that I've had in my tenure at [school A] is bridging that gap between the ESOL department and [my] department. By the fact that we have so many ESOL students taking our subject, we've needed to, it's been a necessity. We've trialled various methods of those. Well, the first thing we'll do is the head of ESOL and myself will often lobby the senior management if we need to for extra time, for extra resources, so in a sense, … collegially as a team of HODs we'll work together. (Interview)

Working together became strained in some circumstances where the world-views, or specialist knowledge, of the two teachers did not appear to align:

> We're supposed to work together but that becomes quite difficult because then it becomes… she wants me to do the work, but then I want her expertise to help me with that work, and so we clash a little bit there. (Interview)

When this happened, the content-teacher's wishes appeared to prevail, placing the ESOL teacher in the position of support person.

- **Subject teacher assumes full responsibility**

In many cases the curriculum teacher had almost no relationship with ESOL staff. Students arrived in their classrooms with little or no warning and the subject teacher felt that it was more effective to work out students' English proficiency themselves. As one teacher said:

> What is the point of getting that information? If you get someone like me that comes along who says, 'Well, I don't care what level they are at, I'm not ESOL trained, it doesn't matter!' I have to try and figure out what level they are for this subject. (Interview)

Little or no interaction with ESOL staff may also have resulted when the subject teachers felt confident that they could meet their EAL students' needs independently of other teachers. Alternatively, the subject teachers might not have understood the disciplinary expertise of ESOL staff (which is also suggested by the comment above) or might not have perceived that ESOL teachers could add value to what they already did as subject specialists.

Summary

This chapter reports the main themes arising from a cross-case analysis of teachers' descriptions of their practice in relation to teaching English language learners in their mainstream classes. A major theme that emerged from the data was the overarching impact of each teacher's disciplinary experience on their views of teaching. Teachers' disciplinary thinking appeared to have a strong impact on how they believe their subject must be taught. In addition, beliefs forged in their strongest discipline seemed to have shaped their response to teaching learners of English as an additional language. The teachers participating in my study had undertaken a maximum of one year's academic study in applied linguistics or a

similar formal programme. All of them had had limited exposure to PD on literacy or language in the form of short courses or staff presentations. Their questionnaire responses also indicated that one teacher had taught overseas, one was fluent in a language other than English, and one mentioned studying an additional language at the time of this research. None had undertaken academic study in their second language.

Thus, the teachers' disciplinary experience far out-weighed their knowledge and experience of learning in an additional language. This fits with literature suggesting that, "subject subcultures may be characterised both by beliefs about the subject matter that bind teachers together and by norms regarding teacher practice, curricular autonomy, and coordination" (Grossman & Stodolsky, 1995, p. 8).

The responses of the teachers in my study suggest that any strategies for supporting EAL students were only adopted within parameters established and promoted within the subculture of their discipline. Consistent with this is the statement by several of the teachers that the literacy practices they employ are good for the other learners of the subject too, that is, not specific to promoting the learning of an additional language. In fact, very few of the stated beliefs of these teachers derive from literature on language teaching and learning and even these are qualified in light of subject practices. In addition, the disinclination to consult with ESOL staff expressed by most of the teachers reflects their reluctance to enter the domain of another school subculture.

The next section further explores the influence of particular curricula on teachers' beliefs and practices by analysing data according to whether teachers operate within a hard or soft discipline. Chapter 6 reconsiders the data using a framework derived from educational linguistics.

5. Cases of hard and soft disciplines

The cross-case thematic analysis in the previous chapter raised the idea that ingrained subject-related ways of thinking and teaching seem to have a significant impact on teachers' approaches to teaching language learners. This chapter pursues subject characteristics further by redefining case boundaries according to whether the participants taught a hard or soft subject.

A closer look at hard or soft characteristics

Chapter 2 described how disciplines can be considered hard or soft, applied or pure, and living or non-living (Biglan, 1973a 1973b), and notes that the subject areas represented in this study fit the categories of hard disciplines (accounting, automotive engineering, chemistry and statistics) or soft disciplines (economics, religion and tourism). Subjects might be further classed as applied but other researchers have found this dimension to be less powerful in distinguishing among disciplinary practices (Lindblom-Ylanne et al., 2006). Since all these subjects are taught in secondary schools, Biglan's (1973a, 1973b) living or non-living distinction may not be useful as secondary teachers consider themselves teachers of students as well as teachers of subject matter, which is revealed by the teachers' familiarity with many aspects of their students' lives (parents' occupation, siblings, sporting interests, country of origin and prior educational achievement).

This chapter thus evaluates findings from the data according to whether the teacher taught a hard or soft subject in order to consider the extent to which these distinctions influence pedagogical content knowledge and affect attitudes to teaching language. In the course of this analysis, any disconfirming evidence for the hard-soft categories will be identified and evaluated for its significance in distancing teachers' beliefs and practices from those highlighted in content-based language teaching research.

A case for composite cases

It is expected that any qualitative analysis will be iterative and there is theoretical precedence for redefining case boundaries in order to explore the relationships and emergent theory in fresh ways. For instance, Gillham (2000) notes that case study research:

> seeks a range of different kinds of evidence which is there in the case setting but which has to be abstracted and collated to get the best possible answers to the research questions. (pp. 1-2)

Collating curriculum areas into two abstracted and composite cases enables a closer comparison of the teachers' beliefs and classroom practices. By reconfiguring seven cases into two, I follow a typological model where:

> cross case comparison can support the creation of clusters or families of phenomena. (Khan & Van Wynsberghe, 2008, p. 5)

By clustering disciplines into cases of hard or soft belief systems, I explore the usefulness of this construct before investigating further how these two classifications might inform secondary teachers' openness to language learning beliefs and practices. This approach also follows the practice of using multiple case analysis for "grounded theory building" where an analysis of cross-case relationships allows data and theory to inform each other recursively (Eisenhardt & Graebner, 2007, p. 30). Thus, in this chapter I analyse data using the conceptual framework provided by hard/soft case characteristics.

Earlier, I constructed a table listing thirteen contrasting descriptors garnered from literature to illustrate characteristics of hard and soft subjects (Table 1, p. 14). The qualitative thematic analysis conducted in Chapter 4 signalled the significance of three of these descriptors: knowledge-related or socially-related approaches; open entry to classes or streaming; and the degree to which subject matter is sequenced. In this chapter I primarily interrogate questionnaire and classroom observational data to evaluate the influence of discipline on teachers' stated beliefs and their visible classroom practices within the two composite cases.

The first data were gathered from each teacher using a questionnaire (Appendix 5) in which they used a Likert scale to evaluate their familiarity with various principles of second language teaching English as an additional language. A diagrammatic (non-statistical) representation of teachers' questionnaire responses (Figure 4) suggests a tendency for teachers of hard subjects (HS) to be slightly more confident than their counterparts in soft disciplines (SS) about meeting the needs of their EAL students. The only exception (where SS teachers were more confident) was item 7: *I make connections between the world-view of my subject and my students' world-views.* The HS teachers appeared to be particularly confident that they achieved the criteria for statements 4, 6, 9 and 10: *I identify the language demands of my subject, I provide students with a variety of opportunities to engage with new concepts, I construct tasks that require students to work together* and *I provide opportunities for students to evaluate their progress.* Chapter 6 addresses issues of identifying language demands and teaching the language of the subject in detail using a framework from educational linguistics. This chapter will explore the remaining issues.

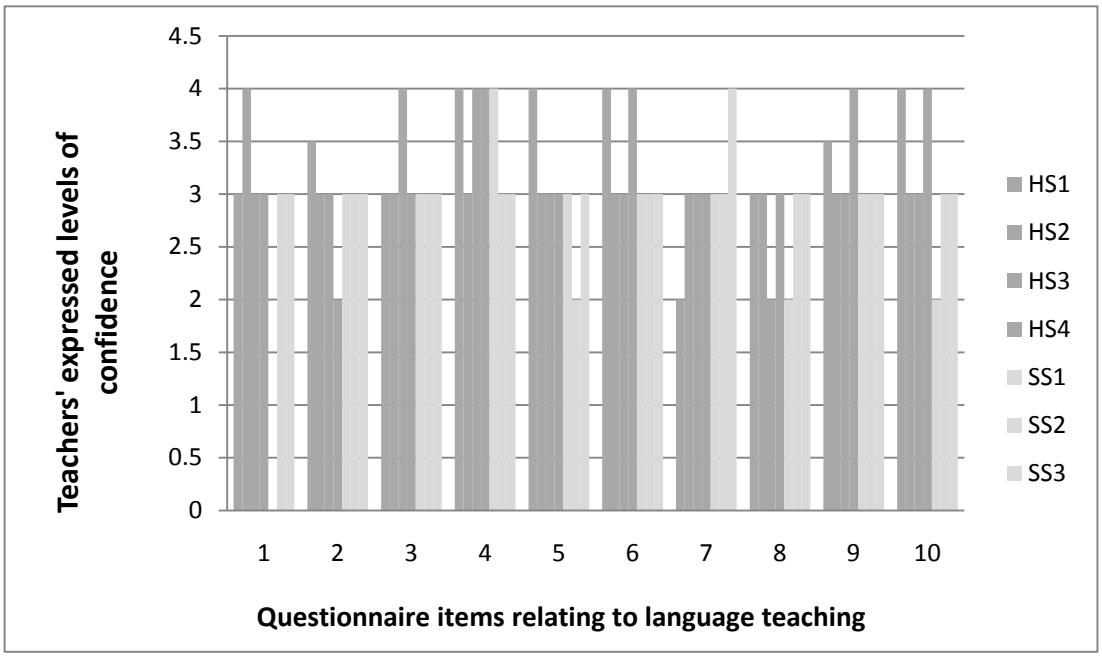


Figure 4: Levels of confidence in teaching EAL students according to hard or soft disciplines

Three open-ended questions followed the 10 questionnaire statements and offered teachers the chance to use their own words to describe how they adapt their teaching to

accommodate the learning of EAL students, identify their practices that have the biggest impact on EAL students' learning and make any further comment on their teaching practices. I use these teacher-identified priorities in conjunction with my field notes and observational transcripts to discuss the two cases.

The hard case

Beliefs about supporting EAL students

The teachers of hard disciplines felt that it takes time to learn through a new language and it was important to allow EAL students time to learn. Time was a recurring theme. For example, one wrote guardedly about maintaining high expectations for EAL students:

> They can *in time* reach achievement level or more. (Questionnaire HS teacher)

Teachers did not want to set students up for failure by pressing them to reach cohort level too quickly. Allowing time also included giving students the option not to sit language-heavy assessments until the teacher felt they could cope:

> This gives time to complete the other, less language rich standards. (Questionnaire HS teacher)

They also felt time was best spent with the teacher. They wanted to build a rapport with their new students, prioritising:

> Building relationships- confident with each other/cooperation (me with student). (Questionnaire HS teacher)

and to build on this:

> Spend more time one to one with those students. (Questionnaire HS teacher)

Most specified how important it was to:

> Provide plenty of practice time where I go round to help the students. (Questionnaire HS teacher)

Several teachers of hard disciplines felt that time and practice in the context of their curriculum classes would be sufficient to address any language challenges posed by their subject:

> I typically gather their work in and mark it every two to three weeks,… and tell them what they need to do next and what they haven't done properly yet; so there's none of this testing of the language to see whether they've got it right – they get it over time by using it. (Interview HS teacher)

It was not uncommon for these teachers to state that mathematical aspects of their subject posed no language problems for learners. They also felt that it was possible to separate language from concepts:

> My main thing is, can she understand the concepts, not can she understand the word correctly. (Interview HS teacher)

One teacher added that in junior classes EAL students worked through (sheltered) subject booklets where they were:

> learning language rather than concepts. (Questionnaire HS teacher)

One teacher of a hard discipline felt strongly that students learnt well when they had opportunities for interaction with other EAL students and mainstream students, and described (in an interview) how he had set up peer support systems for EAL learners. However, he also felt that it was easier to achieve socially-related learning when he was teaching a soft subject and confessed that it was difficult to adapt his hard subject for EAL students. The other teachers overwhelmingly preferred to take on the responsibility of interacting with EAL students themselves. Peer interaction to them was described as:

> seat[ing] students in groups to discuss among themselves. (Questionnaire HS teacher)

In practice I observed this to mean that the teacher allowed students to work together in the independent phase of the lesson if students wanted to, but lessons were not necessarily structured to ensure discussion was a planned feature of the learning.

Ensuring that teachers achieved clarity in their own writing, speaking and instructions were fundamental teaching techniques that teachers of hard disciplines considered beneficial for EAL students. To achieve this, these teachers also felt that it was important to provide written notes to reinforce any oral instructions given in class. They advised that written material should be written clearly and simplified to facilitate comprehension. Another suggested means of simplification was 'chunking down' or breaking complex ideas into more manageable components for students to master incrementally.

These teachers also watched EAL students carefully for signs of comprehension, and tried to:

> look for facial expressions that indicate lack of certainty. (Questionnaire HS teacher)

In addition to spending extra time with these learners and simplifying texts, the HS teachers believed that they should introduce key concepts using a range of different techniques including visuals and gestures, and they should reinforce learning by returning to these concepts repeatedly, which fits their confident responses to the questionnaire item: *I provide students with a variety of opportunities to engage with new concepts*. Indeed, multimodal approaches seemed fundamental to all the teachers (HS and SS).

Observed classroom practices

The next phase of data gathering involved interviews and a classroom observation. The teachers scheduled when I would watch them so they could exemplify some of the practices they felt were important. It was interesting to observe the alignment between their stated and observed practices.

The layout of desks and classroom displays create a first impression in any teacher's classroom. Every class I entered had vibrant subject-related objects, charts and student work covering the walls. Some teachers of hard subjects suffered from external constraints on the layout of their classroom. Two of the four lessons in hard disciplines that I observed

were held in specialist classrooms with benches that may have limited flexibility for seating arrangements in comparison to classes with individual desks for students. One of the other classes clustered desks in groups, and the other organised students to sit in rows of individual desks. Despite this variation, the lessons were consistent in that, regardless of the seating arrangement, none of the hard subject teachers engineered co-operative, pair, or group work. Even though some of the classrooms' layout afforded opportunities for student cooperation, the tasks set in all four HS classes required students to work individually. This is in direct contrast to Questionnaire item 9: *I construct tasks that require students to work together*, where HS teachers rated themselves highly. Teachers in two of the HS classes invited students to actively participate in the lesson by role-playing or writing answers on the whiteboard but these tasks were achieved by individual students performing a task alongside, not in collaboration with, their peers.

Interestingly, in the course of interviews with teachers of hard disciplines and in further conflict with their questionnaire responses, they shared the belief that group activities were time-consuming and better suited to junior students and/or students who struggled to learn:

> HS teacher: So I might do more interactive stuff later on. Those sorts of things get them to explain more.
>
> Margaret: And so, if you had time, why would you prefer to do it that way?
>
> HS teacher: Because I think it helps the transfer- for weaker students.

In short, the way each classroom was set up might indicate that junior or low-streamed classes shared the room since teachers believed that they would benefit from interactive learning. However, the observed classes reflected the HS teachers' stated beliefs that EAL students learn better if they interact directly with their teacher rather than one another.

The shape of the lesson

A feature of the classes in hard disciplines was a familiar progression of activities, tending to follow the format of review, instruct, practise and recapitulate. Students arriving into these classes were familiar with the class routine and, in two classes in particular, glanced up at the whiteboard for the warm-up or revision task, then began work as soon as they entered the room. While HS teachers spent much of the lesson talking to the whole class in the instructional phase, they also felt it was important to allow opportunities for individual students to master a new concept by practising independently. One teacher explained:

> You give them the formula and they'll practise it and practise it and practise it and persevere until they get there with it. (Interview HS teacher)

Within this general format it was notable that the teacher's voice dominated the HS class. My field notes record the time spent on the different phases and it was common for the teacher to talk for about at least one third of a one-hour lesson and for students to work independently for about half of the lesson.

A closer look at the kinds of questioning employed by the HS teachers during their instructional phase reveals that initiation, response, feedback (IRF) sequences were very common (Gibbons, 2002), and that the teachers were likely to drill down on technical vocabulary. Students often responded to teacher questioning using one word answers in the observation lesson:

> HS teacher: What is the value of [x]?
>
> Students: 120, 000
>
> HS teacher: Thank you

And:

> HS teacher: Do you remember what that thing on top is called?
>
> Student: The head

Another feature was the use of rhetorical questions. At these times, the teachers explained a new concept and questions were used as a means of including students or perhaps ensuring that they were concentrating on what the teacher was saying. The teacher did not expect, or wait for, an answer. Although hard subject teachers used devices such as adding students' names and the inclusive pronoun 'we', they did not always ask authentic questions or wait for an answer:

> Rather than add up all of these numbers, why don't we just take the total that we got to, which was $150, minus the $2000 that [Henry] won't pay us, and minus the $300 that [Ella]'s not going to pay us, and minus [Hemi]'s $35,000, because he hasn't paid us yet? (Observation HS teacher)

At other times this teacher appeared to actively seek students' input but the students confidently waited in silence for the teacher to answer his/her own questions:

> HS teacher: What's Pb?
> Students: (silence)
> HS teacher: Lead. And lead is a….?
> Students: (silence)
> HS teacher: Metal

Artefacts from these teachers' lessons reveal the emphasis placed on independent mastery and reflect the opportunities given during class for students to work on their own to practise new processes. Appendices 8 and 10 are a worksheet and an external assessment paper intended for students to practise independently. The other three teachers of hard disciplines did not distribute handouts during their lessons or have documents available to share with me afterwards.

At the end of each lesson, teachers of hard disciplines checked for students' understanding (as stated in Questionnaire item 10: *I provide opportunities for students to evaluate their progress*) and reminded the class of what they had learnt:

> You would not normally start anything new towards the end of the lesson, and you would do more reinforcement work. (Interview HS teacher)

They also looked ahead to the next lesson. One teacher told the class what was coming up in the next class, another had homework for the following day visible on the whiteboard during the whole lesson drawing students' attention to it late in the lesson, and another was not in the habit of giving homework as his (though hard) was also an applied subject requiring specialist equipment. One teacher's closing phase shows how she prepares students for the next new concept and also illustrates further teaching characteristics highlighted by HS teachers. She repeats the new term and repeats her instructions at the same time as she legibly writes what she is saying on the whiteboard:

> We are going to go straight into an activity on something called electronegativity tomorrow when you come to class. So here you go, I want you to write down in your homework book, electro- it's all one word, but I can't fit it there. Maybe I'd better start again, I'll write it up here. Electronegativity, see that? It's about electrons, and it's about being negative. Electronegativity. Write that in your homework book…Three bullet points. You are going to write me three bullet points about electronegativity. Where are you going to find them? ... Google, great. Define, dot, dot. Define, colon, electronegativity. Define, colon, electronegativity. Your blue text book that I gave you last week you should read three sources of information before you do this. Read it in three different places and then pick three things to write about electronegativity. (Observation HS teacher)

These recurring questioning and classroom routines appear to arise out of the preferred sequential ways to share meaning within hard disciplines.

Preferred ways to make meaning

> Within each discipline there is a body of knowledge about how learning and teaching in the discipline takes place which has been generated largely through teaching practice in that discipline. (Taylor, 2010, p. 63)

One notable feature of the hard subjects is their quantitative nature. Automotive engineering, economics, mathematics and science all deal with numerical quantities and/or quantifiable elements. These elements are absolute, and their manipulation demands rational thinking and linear problem-solving processes.

The HS teachers openly stated that mathematical skills were an advantage to students wishing to succeed in their curriculum area and these would be a consideration in accepting students into their courses. Possibly as a result of this mathematical component of hard

curriculum areas, a feature of the observed lessons was that HS teachers allocated a significant proportion of class time to allow students to practise problem-solving independently and thus gain mastery of a process or skill:

> So what you're going to do is, you're going to go to Exercise 16.06 on page 187, you're going to work through that, and at 3.00 – no, I'll give you 12 minutes – I'm then going to go over just a little bit. (Observation HS teacher)

And:

> Time for you guys to have a go… There's a task at the bottom where I'm just asking you to have a go at finding out … just in the same way. I suggest for this stage just use your formula, just so that you're getting used to the idea of what to [do]. (Observation HS teacher)

The purpose of these teachers' questions was to draw students' attention to the steps or processes necessary to solve a particular problem. They were not expecting students to explain the purpose of a process, they wanted assurance that students understood each step in which case one or two word answers were acceptable:

> HS teacher: This one here, what am I going to do?
> Student: Square brackets
> HS teacher: Good.

> HS teacher: What's happening, in the top here?
> Student: Explosion.

The following teacher was unusual in her willingness to wait for her students to deduce an expected process for themselves and possibly share it with the class in greater depth:

> I wonder if you can work that out, and see what you notice once you work it out. Anybody worked it out? (Observation HS teacher)

It was more common for HS teachers to talk a process through for their students, which happened even in the example above where a student offered a brief answer that the teacher expanded on for the benefit of the class. Cause and effect structures emerged as further signals of clearly defined, quantitative forms of knowledge. See the use of 'so' below to indicate a knowable truth:

> We know that half-full energy level carbon, half-full energy level silicon is in the same group …So half-full energy level forms covalent bonds .(HS teacher observation)

Unsurprisingly, given that elements bond in predictable ways, there is no room for an alternative interpretation in this example. Because definitions, problems and formulae play a significant part in the content of these subjects, solutions and processes are often seen as universal and are unlikely to be negotiable. Linguistically, quantitative values were signposted by the teachers' use of imperative statements and modal structures like *must*, *need to* and *always* (compared to conditional forms like *if* and *might*), as well as the timeless present tense used to show that a phenomenon is universally accepted as a fact, and passive constructions to emphasise the process rather than the actor (these are italicised in the examples below):

> In a covalent substance the atoms of non-metals *share* electrons with each other. One electron from each atom *is shared* by both. (Timeless present tense and passive mood: Observation HS teacher)

> No, you're not adding it, you *must* subtract it. Ok? You *always subtract* what you get in this one here from that one there. Alright? Good. (Modality: Observation HS teacher)

> *If* we're doing some sort of calculation, and say we're working for NASA, … where it's really crucial, and say we're trying to put a rocket on the moon, *if* we just make an *approximation*, instead of hitting the moon, we *might* hit Mars, or something else, ok? We *might never* get our astronauts back. So we *need to* do something that is a lot more *accurate.* (Conditional mood, modality: Observation HS teacher)

The last example also contrasts *approximation* with *accuracy* in order to accentuate the importance of absolute values. It is obvious that accuracy is highly valued and, in the teacher's example, there could be life and death consequences for inaccuracy. The teacher was demonstrating a disciplinary way of thinking where ambiguity could not be acceptable.

Time pressure

All teachers of year 12 classes aim to prepare students with subject knowledge and skills to enable them to pass NCEA assessments. Yet, there was a sense that lessons in HS curriculum areas had been carefully, even strictly apportioned in order to cover a defined number of topics at a certain rate. My field notes for HS observations record "time constraints" and "This is a power lesson". For example:

> And then on Monday we'll get into rates of change, which you'll be here for, but then on Tuesday I'm going to start kinematics. (Observation HS teacher)

My impression when observing the HS classes was that there was pressure to conclude a topic within a defined time and this would be achieved more effectively when class members had similar background knowledge in the subject. This HS teacher was concerned that his school was:

> …in a falling-roll situation, and so to allow there to be a wide range of choice subjects, it has been decided that in English and maths and science, the core subjects, they [students] go where the timetable allows them to go. So they just get put into a class, and then the teacher, we are told, should be able to teach to all of their levels. (Interview HS teacher)

The teacher's discomfort with school policy is reflected in the distancing phrases created by the passive constructions "it *has been decided*" and "we *are told*", which also convey his lack of agency in affecting this policy. His doubt that effective teaching is achievable in a mixed level class is also reflected in the modal verb "*should* be able to teach them". His preference would have been to construct and teach classes where the learners were at a more homogeneous (streamed) level.

Contingency, a hard exception

A clear exception to my observations that HS teachers preferred to take a logical sequential and somewhat rigid approach to lesson delivery was offered when a HS teacher remarked at the end of the observed lesson:

> That wasn't the lesson I was planning at all! And that's why I do these quiz things- because I thought they'd be able to do that quite easily from the two lessons we've already had …. And they didn't have a clue, did they? (HS teacher interview)

Despite the urgency placed upon her by a rigid assessment schedule, this teacher seized the teachable moment or conducted a contingency strategy (van Lier, 1992) to take the lesson in a different direction from what she had planned. She was prepared to take time to be sure that the students had really grasped the concept taught in previous lessons.

In summary, the HS teachers in this study present a reasonably coherent case. They speak the discourse of good teaching in their questionnaire responses. Nonetheless, they appear constrained by disciplinary ways of thinking, and possibly by a full curriculum that needs to be delivered in a finite time period, preventing them from exploiting what they say is good practice. HS teachers appear to believe that for the sake of efficiency, and in order to give individual students adequate practice time, their subject matter needs to be explained by a teacher expert, and that knowledge dissemination is the teacher's responsibility. If EAL students are to gain mastery of HS, these teachers recommend giving them time, simplified materials, and one-to-one support from the teacher.

The soft case

Beliefs about supporting EAL students

Three teachers of soft subjects (SS) comprise the second case. Their responses to the Likert scale statements tended to be more conservative than those of their colleagues teaching hard disciplines. Their questionnaire responses were less assured than their counterparts' with the exception of item 7 *I make connections between the world-view of my subject and my students' world-views.* The open-ended questions provided an opportunity for teachers to express how they adapted their teaching to support EAL students and also the practices that they felt had the biggest impact on EAL students' learning in their mainstream class. These priorities were reiterated in the interviews. Confirming their commitment to acculturating new students and valuing their diverse experiences (item 7), the responses of teachers from soft disciplines strongly support a focus on their learners. All three SS teachers repeatedly used phrases like: "co-construction" or "co-operative learning" or "grouping" and these teachers consistently prioritised "peer tutoring" or "peer support" in their questionnaire answers.

They further described their views about interactive learning in their interviews:

> It's getting them socialising, communicating, and talking [the subject] with each other. (Interview SS teacher)

> It's making the opportunities available for them to find out more information. And peer-tutoring type of situations, and that's both ways. (Interview SS teacher)

One teacher explicitly prioritised "co-construction of relevant context" as a means of supporting EAL students' learning. The following comments are indicative, showing that not only do teachers from soft disciplines consider EAL students an asset, but that they feel it is also important to prepare the wider class to view these students positively:

> At the start of each course and often each term with regard to the arrival of new international students with ELL needs the class re-visits reasons behind international students studying in NZ. (SS teacher questionnaire)

And

> New students are encouraged to identify on a large classroom world map where they come from and introduce themselves. This fairly informal welcome helps with classroom empathy with respect to special learning needs of each new student and allows for them to be put in a suitable in-class learning environment. (SS teacher questionnaire)

Encouraging new students' use of their L1 was a response that featured exclusively in SS teachers' questionnaires. This may be viewed as a means of acculturating students by providing them with a means of interacting first with their fellow L1 speakers and then with the wider classroom community as indicated by this teacher's comments:

> They are encouraged to communicate in their first language and to sit together. [At] Set times they will also be asked to sit with others for peer help. (SS teacher questionnaire)

This suggests that language has a socialising role.

Observed classroom practices

The three teachers of soft subjects positioned their students by gathering the students' desks into groups. They then exploited the seating arrangement by conducting highly cooperative and interactive tasks. The students in the SS classes needed to face one another because they were required to work together with facilitation from the teacher. It

was also a feature of the SS classes that students were obliged to leave their seats to seek answers from other groups of students.

Documents shared with me by the teachers after I had observed their class further emphasise these teachers' socially-related approaches to thinking and teaching. Appendices 7 and 9 are tasks that clearly require students to collaborate to achieve an answer. Appendix 8 is a retrieval chart where students could record answers elicited from other students which were later confirmed in discussion with the whole class. Appendix 10 is (literally) a jigsaw piece intended to be connected to a piece of information provided by another student in order to create concrete as well as conceptual connections. Again, these artefacts reveal the teachers' constructivist concepts of learning.

The shape of the lesson

The format of the lessons in soft subjects provided a marked contrast to those of their HS counterparts. In the three SS classes the teachers placed the day's lesson in relation to the wider unit of work and preparation for assessment (like their HS colleagues) but then gave over the bulk of the lesson time to student interaction. The purposes of the observed SS lessons appeared to be expressed holistically and reflect a focus on socially-related learning. The teachers' learning objectives aimed for their learners to:

> improve our understanding… through discussion with other students. (SS teacher's notes on board)

Another teacher expressed the holistic epistemology of his subject in this way:

> I'm looking at a lot of things; I'm looking at themes, I'm not looking at… well, I'm not always looking at the nuts, the bolts; …I don't need to focus entirely on one little aspect, I could be looking at the big picture. (Interview SS teacher)

This suggests that understanding in soft subjects is broad and negotiated rather than clearly defined or absolute. Such qualitative characteristics were reiterated in teachers' questionnaire answers, where SS teachers also stated that they were prepared to:

> Adjust the pace of lesson delivery or the number of standards offered. (Questionnaire SS teacher)

There was a sense of flexibility about course contents and the pace of delivery of soft subjects that was not evident in the hard disciplines. This also extended to flexibility about entry to courses, discussed in the previous chapter:

> [This] class is such a real hotpot of different levels and abilities. (Interview SS teacher)

Such comments, further explained in the course of interviews, express a philosophical acceptance that heterogeneity is to be expected, and even embraced.

The teachers of soft disciplines spent about ten minutes at the beginning of the lesson recapping or explaining the task. Some wrote advance organisers or learning intentions on the whiteboard, others confined themselves to oral instructions. Like the teachers of hard disciplines, these teachers used the final five to ten minutes to review the day's learning.

Student talk

The time spent in teacher talk or student talk was one of the most defining differences between the teaching observed in hard and soft disciplines. The teacher talk in soft subject classes was less instructional than facilitative. For example:

> Sam, ask Matt. (Observation SS teacher)

And:

> Find where you think [that place] is. Pat, you can use that computer too, if you need to. Try and find it, and then you can show Max where it is. (Observation SS teacher)

When it was time to sum up the results of the task and close the lesson, these teachers differed from the teachers of hard subjects in that they sought answers or main ideas from the class, only offering their own input as a last resort (which happened infrequently):

> SS teacher: What is the cause of [a] …. Emi?
> Student: Well, I only have the change in [b]
> SS teacher: This is the [other] one. So Pam, can you help out?
> Student: Sure…

The SS teachers did not accept silence as a response. This emphasis on student facilitation reflected how teachers described their preferred practices for teaching EAL students in their questionnaire responses. In addition to student interaction in English, student talk in the medium of EAL students' L1 was also considered to be of value to their learning. SS teachers suggested that using EAL students' L1 or L1 speaking peers might act as scaffolding. Two of the SS teachers advised:

> Allow ELLs to sit with L1 classmates. (Questionnaire SS teacher)

In practice, reference to the L1 was visible in only one of all the observed classes when the teacher asked one student to explain something to another student in their shared L1. Nonetheless, SS teachers encouraged their students to speak to one another and did not address the whole class for long periods. Their classes rarely worked in silence. Rather, there was a buzz of student talk throughout the cooperative learning phase and this phase lasted for most of the lesson time:

> The first thing that I guess I'd like to congratulate you on is the amount of noise that's been going around the room. It's all pretty positive stuff. (Observation SS teacher recap at end of lesson)

Not all of this student talk was on task all the time, but this was true for the independent phases of work in hard subject classes too. All of the teachers employed strategies for bringing students back on task. Nonetheless, the key feature of all three observed lessons in soft disciplines was minimal teacher talk and maximal student interaction.

Preferred ways to make meaning

The soft subjects in this study seemed to favour qualitative ways to validate meaning. The ways of thinking in soft curricula appeared to be broad in scope and to focus on holistic, subjective, interpreted ways of thinking where the teaching and learning process was an end with almost as much value as the subject matter. The idea of process was discussed in relation to hard disciplinary approaches, yet in soft subjects, the learning process was achieved differently in that the learning steps seemed more negotiable with various possible outcomes.

The teachers of soft subjects used different linguistic ways to signal qualitative ways of creating meaning. For teachers of soft subjects, it was important for students to construct and articulate their own meaning:

> Student: Miss, do we sum it up?
> SS teacher: Yes, in your own words

This meaning-making was unlikely to be dictated by the teacher. It is significant that throughout the classroom observations, these teachers set students tasks that required the students to revise or seek information collaboratively.

They believed that scaffolding occurred and understanding developed when students verbalised their thinking:

> I think the whole purpose of this was to get a range of students talking about a range of issues, and having to verbalise it, having to think it through and explain it to someone else, which is a mental process which I think helps them when they have to write an answer or communicate an answer later. (Interview SS teacher)

The teacher (above) expresses the value he places on student talk. In addition, he qualifies his comments using "I think". Clearly, the process of meaning-making is flexible and inductive, and thus it was appropriate for SS teachers to urge their students to learn from one another's feelings and experiences:

> It is beneficial for you to listen to what the guys are trying to teach you. You are writing the information that these guys are teaching you. OK? (Observation SS teacher)

SS teachers showed interest in how students applied their conceptual understanding. When a student raised a particular question in the summing-up phase of one SS lesson, the teacher rephrased it and then waited for students to think through and justify their answer to the question. He later confirmed the answer offered by another student:

> The example was, describe your household. So based on the definition 'a group of consumers under one roof', is the baby technically a consumer? That's a good question … [long pause]. (Observation SS teacher)

In these examples, qualitative ways of thinking are shaped within the class learning community and are unlikely to have an absolute outcome like a numerical answer.

Time pressure

My impression when observing the SS classes was that their emphasis on the process of co-construction and thinking resulted in less pressured lessons. This SS teacher reviewed the principle of this lesson with the class:

> The idea was more that you asked them the question, they tell you the answer, you write it, then you get their signature – that way you're having to think about what you're writing, which makes you use a higher level of thinking. (Observation SS teacher)

Although the number of standards assessed within a course was comparable across hard and soft subjects, the observed SS lessons did not feel rushed. One soft subject teacher was an exception as he admitted that the credit load of his year 12 course was rather high at 29 credits (24 credits is a 'rule of thumb' maximum used in many schools). Perhaps then, the relative sense of urgency arose from the different teaching approaches in hard and soft courses. If students are empowered to share the learning responsibility, it may relieve some of the pressure on the teacher to be the primary knower in the class.

Teachers of soft disciplines were as mindful of impending assessments as their colleagues. However, they were more likely to include unit standards in their courses than the hard subject teachers. Unit standards provide opportunities for resubmitting work in comparison to achievement standards which are externally assessed through annual high stakes examinations:

> They've just completed an internal, and most of them are going to need to resubmit bits of it, and I'm going to go over that with them next period. (Interview SS teacher)

Even so, the ways that teachers of soft disciplines responded to assessment pressure seemed distinctive. They tended to design tasks where students would support one another to understand challenging contexts. The teacher (above) revised the areas that

students had not grasped by constructing an interactive, student-centred lesson. “I’m going to go over that” in fact meant that he structured a learning task so that students would revisit the concepts themselves (in the observed lesson).

Exceptions and common traits

Issues of quantitative or qualitative ways of valuing meaning are reinforced by the modes of teaching preferred by practitioners within particular disciplines. One teacher, unusual in that he taught both hard and soft subjects, captured how the two differ.

> I think it’s the nature of [the HS] in that it’s a very independent … it’s a subject that requires independent learning, that’s what it is. I don’t know that you’d get the same in [the SS] class. It wouldn’t be possibly set up that way, where the teacher is just the facilitator and everyone is just busy. There’s just so much content…, whereas [the HS] isn’t so much content-based, it’s a practical subject so they’ve got to just get on with it and do the practice. (HS/SS interview)

I observed the ‘teacher-as-knower’ phenomenon in all four hard curriculum classes but also in one soft class, where the task, though cooperative in intention, did not really require students to collaborate. This meant that despite their placement in learning groups, students directed any questions to the teacher rather than classmates.

Although discrete items of vocabulary might be defined as ‘atomistic’ or ‘quantitative’ traits of hard subjects, teachers were equally interested in their students’ acquisition of technical vocabulary and keen for their EAL students to have access to dictionaries in both their L1 and English. They felt that EAL students would learn best if teachers provided them with lists of vocabulary (written and spoken):

> I often use vocabulary lists at the beginning of a lesson for any difficult or new words being introduced that day (also good for mainstream students). (Questionnaire SS teacher)

And

> In the back of the book we do a glossary when we add a new term, or a term that they haven’t used much before, and write what it is, and discuss what it means, and they’ll write down what it means, and have some examples of that. (Interview HS teacher)

Simplification was considered to be an effective way to scaffold vocabulary learning, that it was helpful to use:

> Simple words to describe the meaning of terms. (Questionnaire HS teacher)

Some teachers also recommended:

> Teaching how words are made up. (Questionnaire SS teacher)

Conversely, making connections between students' life or subject experience and new learning might be construed as a facilitative, learner-centred characteristic, but all the teachers felt that building on prior knowledge was important. Two teachers of soft curricula explicitly promoted members of the class as knowers who possessed rich funds of knowledge that their classmates should exploit. A HS colleague concurred, suggesting teachers should use:

> examples or illustrations that draw on their backgrounds and values. (Questionnaire HS teacher)

Another area that appeared to defy categorisation into a hard or soft practice was multimodality. All the teachers wanted to use a range of media to ensure their students could understand new learning. The teachers included visuals, role-play, diagrams, speaking and writing, retelling and computer sites, and most felt that it was important to use a range of related non-fiction resources/sources to build knowledge about a topic. One HS teacher thoughtfully remarked that just talking about a concept was not enough for EAL students. It was important to also write information as for EAL students because:

> …often learning is at home on reflection. (Questionnaire HS teacher)

They all wanted to provide multiple opportunities for EAL students to learn.

Summary

This chapter examined hard and soft disciplinary approaches as two distinct cases. This dichotomy is worthy of consideration because in some respects the secondary school

context provides a bridge between socially-constructed teaching approaches taken in primary schools and a more knowledge-based research focus favoured in tertiary institutions. Participant data were analysed according to these two epistemological and pedagogical distinctions. While not all data were neatly divisible into one or other category, there were sufficient consistencies within and comparisons between hard and soft cases to justify this approach.

Case studies, given their small scale, are not concerned with generalisations; however, interesting characteristics emerge when closely analysing subjects as hard or soft (Denscombe, 2007). It would appear that hard-soft distinctions are a useful means of discriminating between teachers' disciplinary world-views and may provide a useful basis for conducting larger scale comparisons. Disciplinary characteristics may also have implications for how easily teachers can accommodate new teaching practices beneficial to language learners.

Teachers of hard subjects in this study shared a quantitative view of making meaning. Their subject areas appeared to be definable, dealing with facts, formulae and processes that teachers felt responsible for sharing with their students. These teachers believed that it takes time and independent practice for students to master disciplinary skills, and that it is important for teachers to make themselves available to individual students who need their support.

The three teachers of soft subjects held qualitative values. They favoured student interaction as a means of negotiating meaning in their disciplines. Co-construction and peer support were preferred approaches and it was evident that these teachers carefully planned for learning opportunities where students interacted with one another.

Both sets of teachers focused on preparing students for assessments and both accessed information about their learners' interests and prior subject learning. In neither case did teachers seek information about language learning proficiency, and this is the subject of Chapter 6.

The next chapter begins with research on teaching English language learners in the mainstream, then reflects on the fit between the teachers' expressed beliefs and their practices as revealed by my observation of their teaching as well as their interview data.

6. Analysis:
Consonance and dissonance between principles of content-based language teaching and teachers' approaches

This section considers how the participants' observed and expressed practices for supporting EAL students in the context of their curriculum classes align with principles derived from research into content-based language teaching. Firstly, I outline principles for concurrently teaching content and academic language that have been drawn from empirical studies of integrated content and language teaching programmes. I then examine the extent to which the teacher participants' practices and beliefs about their practices accord with these language teaching principles using data derived from lesson observation transcripts, field notes taken while the observation lesson was in progress, and post-observation interviews. The following chapters will discuss the implications of any consonance and dissonance between content-based language teaching approaches and approaches used by curriculum teachers and the extent to which these can be traced to knowledge-related or socially-related curricula.

Research suggests that successful teachers have a knowledge base that encompasses three essential areas: knowledge of diverse learners and pedagogical contexts for their learning, knowledge of the curriculum, and knowledge about teaching in general (Darling-Hammond, et al., 2005; Love, 2009). The participant teachers' knowledge of the curriculum and general teaching practices was not the subject of this investigation. In fact I specifically sought participants considered to be expert teachers in their subject area. The specific focus of this study was the first element: teachers' knowledge about teaching diverse learners, and particularly their understanding of appropriate pedagogies for students learning in an additional language. Many approaches to combining the disciplines of curriculum and language have been trialled internationally, but the European models of CLIL are arguably less

consistently applied as a result of educational variations across the continent (Coyle, 2007; Wannagat, 2007). In contrast, two large-scale PD interventions have been initiated and well documented in the USA. The SIOP model of PD has been implemented in approximately 50 states over a period of almost 10 years (Echevarria & Short, 2007; Echevarria, et al., 2008). This uses a sheltered model in which content teachers are coached and observed by outside experts as they practise integrating language teaching with teaching their subject according to eight SIOP principles[13]. Less widespread, but equally rigorous, is the Quality Teaching for English Learners (QTEL)[14] programme which started in 1999 and is practised in New York, Texas and also widely used in California – areas where there is a high proportion of EAL students in schools (Walqui & van Lier, 2010). QTEL operates at the classroom, school and district levels, capturing and disseminating effective practice and also mentoring individual and groups of teachers. Between them, these two approaches capture salient socio-cultural principles and associated research-based practices for combining language and content instruction that are also shared across additional international studies (Gibbons, 2009; Valdes, 2005). These principles are captured in Table 3.

Table 5: Principles of quality teaching for English language learners (Adapted from Walqui and van Lier, 2010, pp. 84-85)

Principles of quality teaching for EAL students
Students' experiential background is the point of departure for exploring new ideas • Focus teaching and learning on substantive ideas organised cyclically • Ensure students experience comprehensible input • Develop learning experiences from concrete to abstract
Sustain academic rigour • Engage students with deep disciplinary knowledge (big ideas before details) • Move towards complex texts • Engage students in generative disciplinary concepts and skills • Design lessons with high challenge but high levels of support • Engage students in generative higher order thinking

[13] Retrieved in 6 June, 2010 from http://www.cal.org/siop/about/index.html
[14] Retrieved on 6 June, 2010 from http://www.wested.org/cs/tqip/print/docs/qt/home.htm

Principles of quality teaching for EAL students
Hold high expectations • Adapt and supplement teaching materials • Include metacognitive/socio-cultural activities • Share clear criteria
Engage students in quality interactions • With teachers • with peers • Use L1 strategically
Sustain a language focus • Promote disciplinary language use in meaningful contexts • Share language and content objectives • Develop strategies for vocabulary learning • Amplify don't simplify materials • Promote metalanguage
Develop quality curriculum • Set long-term goals • Develop a spiral progression • Connect students' experiences and subject matter • Ensure tasks are problem-based • Provide adequate feedback

Students' experiential background is the point of departure for exploring new ideas

The teachers were all conscious of the importance of establishing links with their students' prior learning experiences, possibly because this is a technique promoted across all curricula to enhance learning and teaching (Ministry of Education, 2007a). All responded positively to this element of the questionnaire. However, none of the teachers acknowledged the importance of taking into account students' life experiences, interests and learning needs as "the necessary conditions for **second language learning**" (emphasis added, Brinton, et al., 2003, p. 241).

Teachers used examples from areas of their students' everyday lives that they felt would interest their teenage students; including topics such as cars, driving, rugby and fashion, as a strong point of departure for exploring new ideas (Echevarria, et al., 2008; Walqui, 2000).

However, establishing existing subject knowledge was the area of greatest concern, and this was particularly evident in hard, sequential subjects:

> I've got a really good picture of them. I get their results and have a look at those. And at the beginning of each topic and at the beginning of each year we do quite a bit of revising together. (Interview HS teacher)

Teachers reminded their classes about learning undertaken in previous lessons and looked ahead to future lessons and NCEA assessments. Gibbons (2009, p. 59) refers to this effective technique of looking backwards to familiar knowledge before moving ahead to new learning by van Lier's (1992) term: "Janus curriculum". One teacher explained how beneficial it was to his EAL students that he had the flexibility to structure his course in this spiral manner to give students the time they need to acculturate into the subject:

> …if a [student] starts a particular unit of work at the start of the year and is not of the ability to complete that assessment requirement, I can pick that up in term 3 or 4. What I'm finding more and more is that these guys, just about across the board, their language comprehension from term 1 to term 3 is polar worlds apart. (Interview SS teacher)

The teachers all had a range of strategies to establish the students' level of existing subject knowledge, such as learning grids, mind maps and quick quizzes.

In direct contrast to the others, only one teacher felt that it was necessary to establish students' language proficiency and explicitly consider the relationship between the language demands of tasks and the validity of assessments. This teacher had begun a TESSOL scholarship course:

> So I went to [HoD ESOL] and I said: you know I've been working with this chap for half a year now and he's enthusiastic. He seems to have quite good understanding. We have quite good conversations. He's just submitted me his work for this and I can't make head or tail of it. It didn't make any sense at all and that was because his written literacy was so much lower than his verbal and this is was what I learnt through the [TESSOL] course too, that sometimes you can be deceived by the perception that Joe Blog over there is quite competent but in reality they can't translate it into the written form. (Interview SS teacher)

He acknowledged the disparity between a student's oral skills and writing skills, and thus sought help to build his student's written language. His remarks differed from the

comments of the other teachers whose sense of their EAL students' language proficiency appeared limited:

> I believe they are tested, I do believe they are tested by the ESOL department, but I don't have those results, I've never been given them. (Interview HS teacher)

There were also those who did not feel that this information was relevant to their teaching:

> As you know I don't have an ESOL background and for that matter I don't actually enquire about what level they are at. What's important to me is because they are doing this particular subject I need to kind of find out what level I believe they are capable of doing this particular work at. (Interview HS teacher)

One teacher approached her students' cultural and linguistic background from a completely different perspective. She was aware that setting mathematical examples in an unfamiliar cultural context would create challenges for her EAL learners but chose to arm students with learning strategies to assist them to extricate the mathematics from word problems, rather than worrying about the vast range of culturally-bound contexts that students might potentially encounter in an assessment task or teaching them a range of reading skills:

> Like in the first part of differentiation, and I talk about the words to look for, you might see 'maximise', or 'minimise', and that's telling you … If they're asking you to find the area, then you know you've got to integrate. They won't say integrate at the excellence level, so you've got to say, what is it that they're asking me to do here? (Interview HS teacher)

This teacher's lesson was possibly the most socio-culturally context-free of all that I observed— particularly because of the topic under discussion, integration. When she drew on students' existing knowledge, it was exclusively knowledge within her discipline. Since hers is a knowledge-related, hard subject, she justifiably assumed that students had previously learnt particular mathematical processes and drew heavily on these.

Another way for teachers to build on students' existing knowledge is by ensuring that input is at an appropriate cognitive and linguistic level. The term 'comprehensible input' covers the notion that receptive language (or language that students hear and read) should be just a little more difficult than the student's current level of proficiency or at **i + 1** (Krashen,

1981b). This idea also fits with Vygotsky's (1962) concept of the zone of proximal development and suggests that teachers need to be aware of a student's current proficiency in order to moderate their level of teaching accordingly. None of the teachers was aware of their EAL students' language levels. In fact, only two of the teachers felt that this might be useful information. Much more important to them was establishing "**i"** as the content level:

> It's really, really difficult to ascertain what she can do. And it would be really nice to have something that I can understand from her background that tells me what she knows in the way of science. The concepts didn't seem to be there at all. (Interview HS teacher)

All the teachers had a sense of their students' curriculum competency but were unclear about how language affected comprehensibility. One contrasted the skills required to express ideas in her subject with her ideas about 'language':

> It [doing this subject]'s a skill learned, rather than putting together words and sentences. (Interview HS teacher)

This suggests that she does not see a connection between the subject matter and forms used to express this subject matter, and that language is an unnecessary extra in subject learning.

Comprehensibility was even related to legibility for one teacher who believed that the best way to support EAL learners was by writing clearly.

Cummins' extensive research (1982, 1992, 1999, 2000a) distinguishes between the demands of using interpersonal, social language (BICS) and CALP. He and followers such as Gibbons (2002, 2009) recommend that teachers carefully guide students from using everyday language to using unfamiliar academic language. Cummins' (1982, 2000b) four quadrant model demonstrates how context-embedded teaching can assist new learners of English and how the context-reduced nature of academic text makes it more challenging for students to grasp. Several of the teachers made their lessons more comprehensible by

beginning with context-embedded activities. The most striking example was in the pure but applied subject of automotive engineering when the teacher had his students look closely at a real two-stroke engine before copying and labelling a more abstract diagram representing the two-stroke engine process. Cummins might describe this teacher as moving his students from context-embedded to context-reduced learning. The teacher was less successful in the other quadrants of moving learners from cognitively unchallenging to cognitively demanding learning, as the copying and labelling task did not appear to deeply engage or extend the learners.

Another teacher used a role-play to create an experiential connection for his students with the abstract concept of debt. He then explicitly drew his learners' attention to the connections between the concrete role-play representation and the abstract mathematical representation of the concept:

> This is the same information that was given to you by the actors that came up. The amount that was owed to us at the beginning of the year was $30,000, so in this little box here, I'd like everyone to write down the calculation that we just did now as a role-play. (Observation HS teacher)

Finally, this teacher summarised the process of developing increasingly abstract levels of thinking in her class:

> I guess we'd start with visuals, and then characteristics, and then perhaps move on to differentiating characteristics, so having them in different groups, to move on to concepts. (Interview SS teacher)

This example clearly illustrates her beliefs about the process of scaffolding students from concrete to abstract understandings where students engage in higher order, academic thinking. This process fits well with literature on promoting language learning.

Sustain academic rigour

In order to achieve academic rigour, students must learn to appropriate the ways of thinking prioritised in a discipline through experiencing and managing the concepts of that

discipline and through using language to express these disciplinary understandings (Lave & Wenger, 1991; Walqui & van Lier, 2010). To sustain academic rigour in their students, teachers are advised to be clear about the big ideas of their area and how these are realised before looking at peripheral concepts and details (Gibbons, 2009). Some examples of different ways of thinking may include those in Table 4 below. Interestingly, these tend to align with the hard-soft distinctions discussed in Chapter 5.

Table 6: Disciplinary ways of thinking (Adapted and abridged from Carrasquillo, Kucer, & Abrams, 2004, p. 87)

Reading & writing are used in this subject to	**Social sciences**	**Science**	**Mathematics**
Generate & organise major ideas or concepts by	Analysing information	Observing & gathering data	Using various mathematical functions
Support major ideas or concepts with details by	Developing concepts and generalisations	Generating hypotheses or predictions	Estimating to solve problems
Establish interpretations supported by textual information & background knowledge by	Generating hypotheses	Testing hypotheses	Using mathematical knowledge to explain events
Make associations between & among texts by	Formulating decisions	Modifying decisions	Interpreting events using mathematical knowledge

As revealed in numerous studies of middle and secondary school EAL students, students need both high challenge and high support to attain academic success (Gibbons, 2009, Hammond, 2006; Sharpe, 2008). This challenges teachers to take a proleptic approach to their job and anticipate skills that learners do not yet possess by putting in place scaffolds to assist learners to reach their potential (Walqui & van Lier, 2010). The participant teachers appeared to put this into practice to some extent. They stated the intention that the EAL students in their classes would achieve the same results and master the same skills as their peers. However, there were few visible scaffolds built into the learning process to balance these high academic expectations. Teachers mostly felt that if an EAL student did not understand, it was the teacher's job to provide one-to-one support, and thus they

largely overlooked scaffolding using task design or structured peer interaction that might have provided equal or greater benefit to the learners. Most of the teachers preparing students for achievement standards described how they encouraged students to move from more superficial thinking required for an 'Achieved' grade to more complex answers required if students were to attain 'Merit' or 'Excellence'. They accepted that assessment practices at the time (2009) provided little incentive for students to reach for higher grades, and many students would not strive for more than 'Achieved' (pass). Also, it was sometimes difficult for teachers to decide what EAL learners were actually capable of because it was difficult to assess their level of understanding. One teacher stated: "I just don't know whether I should be trying to get them to aim higher than they are." This indicates that some teachers may have suspected that knowing about students' language levels might have provided useful information.

Because most teachers did not consciously provide pedagogical and linguistic scaffolding for their learners, it was difficult for them to share metacognitive strategies with their classes (Walqui, 2006). One teacher asserted that this was a priority in her classes, although it was not apparent whether the students were really able to talk about how they were learning since the class I observed was reluctant to speak. She listed a number of approaches that would encourage learners to reflect on how they were learning:

> I try to teach them revision methods, I give them time to do particular types of activities in class. At the end of topic I teach them how to do mind maps and they get really good at them in year 12. And then from the mind map to flashcards … I try and teach them how to do good revision. About colour and underlining and headings and so on. I collect their books even in year 11 to make sure they are making good use of notes and so on. (Interview HS teacher)

Since I only observed one lesson with each teacher, I may have missed instances where teachers had structured their lesson to provide learners with high levels of challenge and high levels of support.

Hold high expectations

High levels of challenge are most likely to occur where teachers hold high expectations for their learners. While motivation was not explored as an area of focus in this study, more than one of the teachers remarked on the degree of motivation they observed in the EAL students. Within their subject area, these teachers reported their EAL students were often intentional in their study and very motivated to learn. However the teachers own expectations for these students were less clear. The three main functions of academic language all relate to higher-order thinking, according to Zwiers (2008). Academic language is used to describe complexity, higher-order thinking and abstraction. Since the nature of the thinking processes is likely to be curriculum dependent, the nature of the academic language to convey this thinking will also be curriculum specific. Curriculum teachers thus face a dilemma: assuming that students have limited proficiency in English, how can they possibly access the complex thinking required in a senior school subject? (Dong, 2006). Their answer is often to provide students with simplified texts or to place students in lower level classes while they wait for students' English to catch that of their peers (Bourne, 2007). This was a solution suggested by HS teachers in their questionnaire responses. What can be overlooked is the fact that EAL students have about 16 years of life experiences and usually 11 to 12 years of educational experiences by the time they reach year 12. The fact that these students did not undertake these experiences in an English-medium environment does not mean that their thinking skills are frozen at the level of their English proficiency (Ivey & Fisher, 2006). Cummins' (1992, 2005) research indicates the contrary: that conceptual skills exist interdependently across languages. In fact, socio-cultural theory would also suggest that teachers should not wait until their students have reached a certain level before teaching at the next, but that "learning truly happens only if it is ahead of development" and students are stretched a little further than their current status (Walqui & van Lier, 2010, p. 7). How might this be achieved? Some suggestions include using: accessible texts with rich concepts; alternative texts that provoke critical reading; read

alouds and think alouds; asking questions that require more than superficial or single word answers; and using writing to tap critical knowledge (Hammond & Gibbons, 2005; Ivey & Fisher, 2006). Students' thinking is unlikely to be extended if they are taught at their current level of English proficiency.

One lesson I observed showed how a teacher used a rich range of resources to enable learners to access information in a variety of ways and using multiple media sources. My observational notes reveal that:

> Each group has A3 paper and felt pens to make a mind map for their country. Students are from: Outer Mongolia, Vietnam, Japan, Korea and China. [The teacher] uses these boys as resources. Students are using atlases, a laptop, *Lonely Planets*, workbooks and foreign students to gather information. (My field notes)

Such rich resources (including the students themselves) allowed all students to fully engage with the task and achieve the same learning outcomes, regardless of their language proficiency. It was also a powerful way to capture and share different cultural values.

> SS teacher: Fung[15], Shotaro is going to tell you about Japan, you write down some information from him. Are you listening? What's exactly the same, Shotaro?
>
> Shotaro: Clothes.
>
> Teacher: Clothes are exactly the same. Are they? James, I would like you to write that down … Shotaro, more, more information.
>
> Shotaro: Money is yen… y-e-n (Observation)

This teacher also managed student work electronically so that examples/model responses were available on the school's shared drive. In this way the expected standard of work was visible to all students.

All the classes (teachers and students alike) shared the goal of preparing to pass NCEA. Teachers were practised in what one called 'chunking down' or breaking the body of

[15] All students' names are pseudonyms.

knowledge and skills required for the examinations into manageable chunks of learning. Teachers demonstrated their pedagogical content knowledge by writing on the board and orally reminding students of the purpose for the content they were learning and how it was likely to be assessed (Grossman, Schoenfeld, & Lee, 2005; Shulman, 2000).

Engage students in quality interactions

"Education never takes place in a vacuum but is deeply embedded in a sociocultural milieu" (Walqui, 2006, p. 159). Interactions take place in two directions: the students' linguistic and cultural identities need to be acknowledged and included in the learning context, and the academic learning context needs to be open to legitimising the practice of new learners (Scarcella, 2003; Wenger, 1998). My observations suggest that while teachers were eager to open their discipline to new learners, they varied in their ability and willingness to tap into the learners' cultural resources. One openly observed that she did not and could not know her learners' world-views, asserting that her job was to assimilate them into her own ways of thinking rather than engage in a two-way process.

Classroom interaction can be achieved in three ways: teacher with student, student with student, and student with text. The SIOP programme advocates adjusting teacher input to make it comprehensible, to expand ideas and to share the talk more equitably with students (Echevarria, et al., 2008). This is recommended because research has shown that teachers tend to dominate classroom talk and also that they tend to focus more on regulatory (management talk) than instructional or knowledge-related talk (Christie, 1997). This was noted in the discussion of hard discipline teachers' lessons in Chapter 5. The nature of teacher talk in the observed classes fell into soft-hard divisions. The teachers of soft disciplines set up tasks that demanded that student talk dominated the lesson. In three of the seven observed classes, at least 80% of the class time was spent in student-centred activities where students were required to seek information from, and negotiate

ideas with, one another. Teachers of hard disciplines gave instructions, set students to work, then reviewed their answers. Second language acquisition research suggests that students begin to accommodate academic language forms when teacher/student interactions extend beyond the IRF structure commonly used in classrooms (Gibbons, 2009). This works on two levels: the interaction is authentic rather than a rhetorical teacher display and, secondly, students are forced along the mode continuum from colloquial to academic forms as they are pressed to justify and expand on their answers. This might involve the teacher allowing extended wait time and also recasting to achieve a more academic version of a student's utterance (Gibbons, 2009; Walqui, 2006).

Interaction was valued to different degrees by the teachers and seemed to relate to the nature of the curriculum area. Auckerman's (2006) study of 5th grade readers illustrates the different kinds of thinking provoked by teacher- or student-centred interactions (p. 38). Broadly speaking, a teacher-focussed discussion does not place any pressure upon learners to take their place in a discussion and they can play a passive role, whereas if students are empowered to speak, they are more likely to engage in higher-level thinking such as hypothesis-testing and justification.

Interaction amongst students

Teachers working in the social sciences created highly interactive tasks for their students which met many of the conditions for developing bilingual students' productive proficiency (Swain, 1996; Swain & Lapkin, 2002). These included jigsaw reading and human treasure hunt tasks that required students to share information or actively seek it from one another. In the three SS classes I observed, the teacher took a backseat facilitating role, circulating amongst the students questioning, prompting, guiding and keeping the class on task. Their approaches are summarised in the instructions given by one teacher to her students: "Use each other to help each other":

> I think you can get Janey to help you do that. Write it down… Ok Jason, you tell Troy the law of demand first, and make sure that he's ok with it. (Observation SS teacher)

One teacher had deliberately structured groups so that EAL students were seeded amongst them as experts. He was vigilant in ensuring that the class respected the knowledge of these students, and this appeared to be a normal part of the class culture. The following interaction is another observed example of how he used teacher regulatory discourse to facilitate student talk:

> SS teacher: OK Shotaro, how about… what are some of the other, really different things from Japan to New Zealand? Think about… what are the words?
>
> Student: The bus times. In New Zealand, buses are too late… ten minutes, or… whereas Japan the buses arrive on time.
>
> Teacher: Phil, Phil, come listen to this. Explain that to Phil. (Observation)

This teacher consciously assumed the role of facilitator rather than knower as he went from group to group encouraging students to share authentic knowledge with their classmates. He further extended the students' autonomy by prompting them to identify appropriate classroom and electronic resources to answer questions outside the knowledge of the group. He also told me how he configured groups depending on the expertise demanded by particular tasks. In this way, different students took the lead in different situations depending on their topic knowledge, and apprenticed their classmates into their learning. Even so, his distribution of language learners across groups in the example above was justified by social and affective factors:

> The main reason I do it is just to get the groups working together,... I mean, we've got a lot of international [students] at this school now – we're up to 80 – and we're really pushing to blend the [students] into the school community, because … once you get up to about 80, it's very easy for them just to stick together. (Interview SS teacher)

The teacher was very concerned that the EAL students should be inducted into the school community and the class community and thus positioned them as assets. This reflects the notion of peripheral participation in that EAL students were deliberately legitimised to take an active role in the disciplinary community (Lave & Wenger, 1991).

Another teacher used the task structure of a human treasure hunt to ensure that every student needed to speak in order to seek answers from another student during a revision exercise. This teacher spoke explicitly to his class about the how oral language can develop deeper thinking:

> Ok, so the collective knowledge of this class is way higher than the individual parts of it, ok? So you should perhaps spend more time working in pairs and communicating with each other, and when you do your activities – like when you're working through questions – work as teams. Whilst you're going through that learning process, there's no need to actually sit there and suffer, trying to do it all by yourself. Sooner or later you're going to get assessed and have to do it all on your own, but why not learn with the assistance of your peers while you do it, ok? And this sort of process is quite good… they tell you the answer, you write it, then you get their signature – that way you're having to think about what you're writing, which makes you use a higher level of thinking than just passing it [the worksheet] round in a circle. (Observation SS teacher)

He shared with the learners how oral interaction can support thinking and learning, and how working with others acts as preparation and rehearsal for working independently as required in summative assessment tasks. Like other teachers of soft disciplines, this teacher scaffolded learning by manipulating the learning task to ensure that learners sought each other's expertise rather than that of the teacher. This was especially skilful given that his class was composed of two curriculum levels covering different, though related, content. While the task was the same, the content and task sheet was different. Moreover, in addition to listing and defining, the task sheet required students to demonstrate high-level thinking through explaining, describing and contrasting as they answered each question (see Appendix 8). Despite instances when students occasionally by-passed speaking and copied from one another, the teacher generally achieved his objectives. Students moved around the classroom as they tried to answer all the questions, and this necessitated repeating the key ideas while seeking or providing clarification.

Other teachers talked about the value of interaction for learning, especially for junior classes and struggling learners but felt too pressed for time to prioritise interactive tasks with senior classes. This indicates that they perceived interactive tasks to have a remedial function rather than generating thinking at higher levels.

Interactions with the teacher

One HS teacher commented that she preferred to work independently and respected students who also preferred this. She chose to be the 'knower' in the class, perhaps in order to allow her students the privacy the work at their own pace. Interestingly, one of the assessment tasks she discussed with me required students to participate actively in a group to solve a measurement problem. This task required socio-cultural or pragmatic interactions where students had to share responsibility for the outcome of the task and each needed to take a turn. The teacher constructed these groups carefully to ensure that all members would have equal opportunities to participate and demonstrate their knowledge. She explained to me that certain groupings (where students were cliquey and less inclusive of their classmates) would not be fair on the EAL learners. In effect this teacher represented contradictory viewpoints: she taught from the front of her class, maintained her position as knower, yet was very sensitive to group dynamics where group assessment was concerned.

One participant's practice demonstrated a position midway between promoting interactive learning and independent learning. He spoke eloquently about collaborative learning and on the occasion of my observation, demonstrated a role-play approach where the students played the parts of debtors to a business. In this scenario, the concepts were made concrete for the learners although there was no imperative for them to speak or negotiate their understanding. In fact, the teacher talked for most of the lesson and questions were usually rhetorical. For example:

> How much have we collected from our debtors? $102,700? Let's have a look, see if you're right. The suspense is there…. The way I've done it is the far easier way to do it. Rather than add up all of these numbers, all that, why don't we just take the total we got to, which was 150, minus the $2000 that X won't pay us, minus the $300 that Y's not going to pay us, and minus Z's $35,000, because she hasn't paid us yet. We must have got all the rest in, is that right? Make sense? So that grand total then is… $102,700. (Observation HS teacher)

Another teacher's expressed beliefs and practices were also contradictory in that she talked about the value of interactive tasks but in practice designed a task that enabled students to work silently and independently. Any interaction that occurred was between individuals and her. This incongruity probably arose because the purpose of the 'interaction' was really knowledge display or revision. The task was not constructed to require learners to share their expertise. Furthermore, the teacher seemed to condone unresponsiveness in class by joking:

> HS teacher: No, you are not a class who likes to read out what they've written are you?
>
> Students: No, we are too shy
>
> HS teacher: You are too shy! Yes I know you are too shy, I've been saying that for- Can I read out yours, Megan?

An additional element considered to be effective in language learning is learners' strategic use of their home language or L1 (Walqui 2000). As discussed in the previous chapters, teachers allowed students to interact in their L1 when they felt that students would not cope otherwise. However, they did not acknowledge the potential value of the L1 to thinking and learning, in that using the L1 might allow students to think at a higher level than using English alone. One exception was this teacher, who stated firmly:

> I'm quite happy for them to translate stuff; happy if there's two of them in a class, to talk to each other, I don't say that they can't; I tell them they're not allowed to talk to each other when I'm talking, and they mustn't talk loudly across the room to each other, they've got to sit next to each other and talk if they want to; but it doesn't worry me in the slightest. If I was overseas and I found somebody, I'd talk with them. (Interview HS teacher)

Nonetheless, there was no acknowledgement by any of the teachers that the L1 might provide students with access to higher levels of thinking. Rather, most participants were concerned that using the L1 might have a negative impact on the students' English proficiency given that all assessments would have to be conducted in English.

Sustain a language focus

All of the teachers made the learning objectives of their lesson clear to the learners by telling their students orally what they would be learning that day. An example is:

> Today we're doing an investigation or looking at **areas** where the values could have been got using **integration**. I've given you a sheet and I'm going to take you through a bit of it. So, we are finding areas using integration and preparing for the test next week. (Observation HS teacher)

In addition to providing oral learning intentions, several teachers wrote and displayed the learning objectives which further supported the understanding of EAL students in their classes. One teacher had written the following on the board prior to the arrival of his class so he was able to draw students' attention to the objectives and to talk the students through what they were about to learn:

> **Learning intention**
>
> To improve our understanding of economics theories and concepts we have studied this year through discussion with other students.
>
> **Success criteria**
>
> You can explain the [solutions] to economics questions in the human treasure hunt to other students.
>
> Your economic understanding is extended by this process. (Observation, teacher notes on board)

Other teachers had either prepared an advance organiser showing the proposed sequence of activities for the lesson, or used an overhead transparency with information relating to the content of the lesson.

All of the teachers referred to content learning objectives in some way. However, none of the teachers included language learning objectives or appeared to be aware of what linguistic elements were likely to challenge their learners. This is despite their positive self-attributions of 'knowing the language demands' of their subject on the questionnaire. This is a significant omission where EAL students are concerned since these learners need to

acquire both the content and the language used to expound the content (Echevarria, et al., 2008). Snow, Met and Genesee (1989) explain the significance of using language learning objectives to enhance subject learning:

> Content-obligatory language objectives specify the language required for students to develop, master and communicate about given content material. For every topic or concept, certain language is essential or obligatory for understanding or talking about the material. Content-obligatory objectives are both structural (i.e. specification of nouns, verbs, rhetorical devices etc.) and functional (e.g., study skills such as note taking, language functions such as requesting/giving information, narrating, persuading etc.). (pp. 205-206)

This meant that any focus by teachers on academic language was more likely to be incidental rather than planned, and that supplementary materials (You-tube, lesson tasks) were content-based rather than having an explicit language learning intention.

Several of the teachers remarked that they devised their own materials because either the existing textbook was not suitable, or there was no textbook for the subject (see Appendix 9). They created handouts and used workbooks that captured the key subject matter and also simplified the language so that students could access content (Echevarria, et al., 2008). Several made strong connections between simplified texts and simplified concepts, suggesting that the materials were pitched at their learners' perceived linguistic level, but were not devised to scaffold them up to the next level (**i + 1**), or the level expected of the rest of the class. This may suggest lower academic expectations for EAL learners. One described the support materials given to her EAL students in this either/or manner as "very language based rather than concept based". Another teacher described the kinds of tasks in the workbook commonly used by his students as unchallenging and therefore manageable:

> They're all matching (exercises), and it's just they've got a definition and they just have to choose the person who does the job. (Interview SS teacher)

Supplementary materials can be beneficial to EAL students in that they allow students to approach the subject matter in different ways through different texts. However, if students are only exposed to simplified materials, this may be problematic due to a lack of exposure to

models of language appropriate to their subject area, so they may not learn strategies for reading unfamiliar or complex academic texts (Chamot, 2005; Chamot & O'Malley, 1994).

Studies in systemic functional linguistics indicate that particular lexico-grammatical features are prominent in certain disciplines (Coffin, 1996, 2006a; Fang, 2005; Schleppegrell, et al., 2008), but these appeared to be invisible to the participant teachers. Furthermore, the teachers did not reveal understanding about what linguistic features would challenge learners (beyond the lexical), what proficiency levels of the EAL students were, and how to address these issues. This also meant that teachers were unlikely to engage their learners in discussions about language use or build students' ability to use metalanguage, or "language to talk about language" (Gibbons, 2009, p. 62).

Developing students' vocabulary is considered significant in building subject understanding. Nation (2001) explains that there are four kinds of vocabulary in any text: high frequency, academic, technical and low-frequency (p. 11). He recommends a combination of explicit and implicit teaching as well as teaching students strategies for coping with unfamiliar vocabulary. The participant teachers were diligent in emphasising new technical vocabulary. One teacher began with a catchy mnemonic (suck, squash, bang, blow) before methodically eliciting the technical terms to describe the same process of the two-stroke petrol engine cycle. Teachers used diagrams (and realia such as a whole crankshaft) to create context-embedded learning, and to represent concepts as wide-ranging as phases of the grief cycle and the parts of an engine. One modelled the construction of a mind-map on the classroom white-board to show the relationships amongst key concepts (and terms) in tourism. Analogies, synonyms, eliciting, recasting, flash cards, repetition and collocations were all used to make students aware of technical vocabulary. Two teachers used humour to make terms memorable. One reminded students of the image he had created of the male treasury minister wearing women's clothes as a prompt for fiscal drag. Another tried

the pun “Iona Flat” which lost effectiveness as none of the class realised that “Iona” was a woman’s name as well as a homophone for “I own a”. However, even if the humour did not quite work, it created a positive atmosphere within the class. These technical vocabulary teaching skills were significant in view of the nominalisation and abstraction inherent in year 12 vocabulary, and the fact that: “in many cases a word represents an important concept or relationship… understanding a term like *branches of government* requires not only the identification of the functions of each branch but also the relationships between them” (Chamot & O'Malley, 1994, p. 33).

In contrast, more generic academic vocabulary (Coxhead, 2000) was generally overlooked with the curious exception of the assessment terms *description* and *explanation* which had particular value because of their use to differentiate between Merit and Excellence levels in NCEA assessments. Teachers of both hard and soft subjects were assiduous in specifying to their students that describing and explaining demanded different levels of detail, in order to equip them to gain credits: “This would be an Achieved. You can take it to the next step for Merit”. One teacher offered students a choice of questions: they could stay with Achieved level questions, or choose to extend themselves by attempting Merit or Excellence questions. This differentiation of detail was not open to teachers whose subjects were solely assessed using unit standards (religion, tourism and automotive engineering). Interestingly, none of the teachers investigated *describe* and *explain* as text types defined by functional systemic linguistics, which might have afforded a clearer identification of how the grammatical structures of each genre achieved a particular purpose (Knapp & Watkins, 2005).

One teacher clearly explained a process for teaching students to write in her subject area. The class would highlight key words in a question to find out what it was asking; write bullet points expressing the main ideas; then flesh the bullets into sentences and paragraphs using connectors like “like, because or as”. This sequence fits easily into the curriculum

cycle advocated by educational linguists such as Gibbons (2002) and meets the QTEL principle of promoting disciplinary language use (Walqui & van Lier, 2010). Unfortunately, such systematic lexico-syntactical instruction was not visible in any of the observed lessons.

The aspects of vocabulary teaching that were least confidently covered were the links amongst members of a word family. One teacher instructed her learners that "electro-negativity" was made up of two familiar words:

> Electro-negativity, see that? It's about electrons, and it's about being negative. Electro-negativity. (Observation HS teacher)

However, this classroom interaction followed a discussion with me on the subject of breaking down polysyllabic words during which the teacher had expressed doubts about the value of drawing learners' attention to the components of words. My impression was that she included this in her lesson because I was there and had raised word families with her in a discussion before the observation. This was confirmed when I noted the high frequency of affixes in the observed lesson and how these were not explicitly addressed. For example: **De**localised, prot**on**, electr**on**, elect**ro**-stat**ic**, elect**ric**, ion**ic**, metall**ic**, period**ic**, **co**valent, **non**-metallic, **in**ert, negativ**ity.** Overlooking the power of language in this way contrasts directly with another class where the teacher directed students to:

> Work out the difference between **in**flation, **dis**inflation and **de**flation. (Observation SS teacher)

He noticed the impact of affixes and also expected students to use problem-solving to deduce the ways affixes affect meanings, thus engaging them at metacognitive and metalinguistic levels.

Another participant mentioned that she liked to issue vocabulary lists before any subsequent learning took place in a unit of work. Although this practice shows that the teacher appreciated the importance of learning vocabulary in order to access meaning, it also suggests that she was unaware of strategies for contextualising new vocabulary

(Echevarria, et al., 2008; Nation, 2001). Vocabulary learning requires a balance of encountering terms in a rich context where the learner can use strategies to make sense of the new term and teacher-directed learning (Coxhead, 2000). Actually, this participant expressed interest in learning more strategies for teaching language to her learners of religion and seemed aware that there were more skills that she could develop in this area.

Teachers frequently conflated the concepts of language and vocabulary suggesting their own limited metalanguage. I did not observe any classroom discussions (other than those reported above) designed to raise students' awareness of their own language use or metalanguage.

Finally, the teachers had a clear sense of their own knowledge base but they had little conception of the knowledge base possessed by their ESOL colleagues, and therefore they were confused about exactly how their ESOL colleagues could support them (Reeves, 2009). This teacher respected her ESOL colleague, but was hard-pressed to explain how her colleague's skills might benefit an EAL student studying in a curriculum class:

> I suspect that subject support would be at the level of taking a reading from chemistry and having [HoD ESOL] help her to understand what the reading was about. Because I know [HoD ESOL] is not a chemist. (Interview HS teacher)

This is interesting given that the same teacher had just expressed uncertainty about whether a particular student's lack of understanding was a language or content issue:

> I don't know whether she didn't know what to write because of ionic, or whether she didn't understand the instruction about it. I don't know. (Interview HS teacher)

This indicates the challenge inherent in bridging the gap between subject and language teachers' expertise.

Develop quality curriculum

This principle integrates the others and further illustrates current holistic and socio-cultural approaches to teaching EAL learners. Teachers develop quality curricula when they set long-term goals that allow students to track the progress of their language and curriculum learning. A quality curriculum combines the various language skills by including tasks like jigsaw and dictogloss that demand interaction while supporting students to receive, produce and negotiate language appropriately. Instruction should also be multimodal or multisensory (as discussed earlier) to build students' skills in all these areas while allowing deep processing of new concepts (Carrasquillo, et al., 2004). Instruction should include scaffolding embedded in predictable routines that is withdrawn as students reach independence (Walqui, 2006). Finally, content should be visited in a spiral progression and include rich and formative feedback (Echevarria, et al., 2008; Walqui & van Lier, 2010).

Predictable routines were a feature of one class in particular. As the students arrived, they glanced at the expected problem on the whiteboard and settled to work without a word. This provides an ideal setting for scaffolding to operate. However, the class followed the normal routine with no unanticipated problems to be solved or tasks to be negotiated, possibly because this was the last class before an assessment. A trend across all the classes was for teachers to create comfortable learning environments but not necessarily to push the learners to extend themselves within the safe perimeters of this routine.

One particular teacher was explicit with her learners about the learning objectives from the very beginning of a unit:

> One of the ways I do it is, at the beginning of each achievement standard we give them out an 'I can do' sheet, which tells what they have to do for Achieved, Merit, Excellence, and I keep referring back to that. (Interview HS teacher)

This technique promotes self-monitoring in students by allowing them to track their own learning and is consistent with the HS teachers' confident responses for questionnaire item

10. She described how she would offer students regular opportunities to consider the state of their learning by asking:

> I want you all to just sit silently, and just think about two things you have learned today. I never ask them for feedback, but I just try to get them… sometimes at the end of a topic I'll do a mind map for them, just to bring everything in; and I might do a mind map in one topic, and then say to them, look, if you found that useful, then this is what you should be doing in all your subjects across the board. (Interview HS teacher)

Note that the teacher would construct the mind-map for the students which suggested that she was not quite ready to relinquish her position of knower in the class. This contrasts with the approach of another teacher who believed in apprenticing his class into understanding assessment procedures by putting them in the position of assessors for each other:

> They'd mark each other's …and then they'd be able to write in the corrections in a different colour … they could get someone else to assess whether or not they've actually done the question right … would I have gotten an Achieved, Merit or Excellence? And they've swapped papers so …I've got Alice's paper, did Alice answer this question to the required criteria? Did they mention the right vocabulary? Did they argue about the right thing? And if they didn't, what did they need to do? Where did they fall down? So they're actually assessing somebody else's and that person might then go, "oh yeah ok but this is what I meant and you tell, well, actually you needed to have mentioned this". (Interview SS teacher)

A similar practice was described as being a major component of the automotive class given that projects must meet certain specifications. The teacher described how students played the role of stakeholders for one another using a checklist of specifications, creating authentic opportunities for providing peer feedback:

> We tend to do it by people being stakeholders of each other. So we do it using stakeholder feedback, basically. So, … the way to do that in this class might be to have … two pairs of guys have finished their things, and … tell each other what they think about their project. Oh, you know, you didn't get this bit here right, because of blah-blah-blah. And then they'll write down what their stakeholder's said. (Interview HS teacher)

Placing students in the position of evaluator or examiner in these classes was a useful means of supporting students to attain a deeper understanding of assessment requirements. Stepping into the position of knower also enabled them to acquire a metacognitive perspective about their learning.

Summary

This section compared and contrasted teacher practice with principles for content-based language learning. The participants' stated and observed teaching practices were considered in light of these principles and areas were identified where the two overlapped or converged. Curriculum teachers' practice aligned with good language teaching to a certain extent, but there was significant dissonance in the areas of balancing language and content teaching and the value placed on interaction. The following chapter will analyse this in greater detail and consider how teachers of soft subjects may be more likely to appropriate practices leading to language acquisition than their counterparts in hard disciplines.

7. Discussion

The New Zealand Curriculum is unequivocal in instructing all teachers to teach the text types and language forms of their subject areas explicitly, particularly when English is not the first language of the learner (Ministry of Education, 2007a). Previous chapters reviewed curriculum teachers' beliefs about how this might be achieved, capturing their ideas about teaching EAL students and aligning their stated practices to those considered effective in integrating content and language teaching. Data analysis suggested that the participants were unconvinced about the relationship between language teaching and curriculum learning.

This chapter further examines curriculum teachers' views on combining the teaching of content and language in the context of current literature. It considers: the extent to which some disciplinary ways of thinking may accord with language teaching; how and why teachers confuse the concepts of literacy and language acquisition; examples of the way disciplinary language demands may exceed those recognised by curriculum teachers; and how curriculum teachers' perceptions of teaching language differ from research-based practice. The discussion in this chapter leads to the final chapter where I examine some of the issues involved in bridging the epistemological gap between teaching a well-defined subject and the language required by a disciplinary community.

Disciplinary ways of thinking

Professional teacher knowledge consists of subject matter knowledge, general pedagogical knowledge, pedagogical content knowledge and knowledge of a particular teaching context (Grossman, 1990; Shulman, 1986). This well-known model illustrates the relationship between subject thinking and subject matter, and shows that both affect teaching approaches preferred by practitioners within a particular discipline. It captures the complex interaction among thinking,

knowing and teaching that inform teacher beliefs and practice, and shows how teacher professional knowledge begins with subject knowledge. However, Shulman's framework is dated in that it does not capture the way disciplinary practitioners favour particular *language forms* to realise substantive and syntactic curricular structures (the paradigms and means of evaluating knowledge claims preferred by a discipline). This issue of disciplinary language choices is discussed further in the following sections, but its oversight in generic literature on teaching may explain why the teachers in this study do not appear to employ subject-specific approaches to teaching language, even though they otherwise reflect strong subject-specific teaching traditions.

The impact of teaching hard or soft subjects

Because the participants in my study were experienced and expert, they were aware that curricular ways of thinking created opportunities and limitations for learning. They attributed these to 'the nature of the subject'. One teacher compared the approaches suited to teaching economics and accounting, describing accounting as a practical subject where students require plenty of individual opportunities to apply what they learn. Economics, on the other hand, was seen as less applied, and the teacher felt that it was more appropriate to structure economics classes to allow for interaction. Such disciplinary perceptions allow subjects to be categorised as hard or soft, applied or pure (Biglan, 1973a), and socially-related or knowledge-related (Neumann, et al., 2002). The teacher above, who taught both economics and accounting, appeared to define accounting as a sequential and applied subject, in comparison to economics which he found content-based yet socially-related. Another participant economics teacher described this subject even more strongly in terms characteristic of soft subjects. The 'nature of the subject', or each teacher's perception of this, clearly shaped teachers' pedagogical content knowledge or the choices they made relating to teaching subject matter. It was also evident that subject characteristics, and even topic characteristics, generated pedagogies that were more or less likely to overlap with socio-culturally based approaches considered beneficial to language learning.

Looking again at Table 1 (p. 14), it might be expected that teachers of soft subjects (religion, tourism and economics) are more likely to practise teaching approaches that benefit language learning because these subjects tend to favour a spiral, learner-centred curriculum where content is broad, negotiable and socially-related. Sequential and teacher-centred approaches typical of hard subjects (like chemistry and mathematics) and also applied subjects (like automotive engineering and accounting) seem to offer their teachers less scope to promote student interaction. Instead, these disciplines appear to favour approaches where students engage in independent problem-solving under the oversight of an expert (teacher).

The most obvious areas of dissonance between approaches taken by teachers of hard subjects and language learning theory related to notions of sequence. These teachers frequently mentioned that they were under pressure to complete a topic or an internal assessment by a particular time. They did not feel that they had any latitude to spend extra time on a particular topic or revisit it in a different way. The teachers were as creative and flexible as possible within the constraints of the assessment schedule. They reported using varied media such as You-tube, additional texts and study groups to try to make their subject matter comprehensible to learners. They acknowledged that co-constructive pedagogies were a good idea that they might pursue (if there was time) with younger learners or struggling learners. However, it appeared that constructionist approaches either were not a priority, or did not have validity for the teachers of hard subjects. Teachers of sequential subjects thus viewed language acquisition as a matter of building skills over *time*. Allowing time to practise disciplinary skills, rather than implementing particular language-focused interventions, was therefore the preferred response of these teachers to the needs of EAL learners.

There were two particular areas where teachers of both hard and soft subjects felt confident in their expertise, and their approaches aligned to those advocated by research-based educational

linguistics to a certain extent. All the teachers advocated establishing their learners' prior subject knowledge, and they all were aware that academic literacy skills are necessary for students to achieve in senior classes.

Using students' prior knowledge

Drawing on students' prior experiences to develop new schemata is considered good practice by both curriculum and language educators (Anderson, Rand, & Anderson, 1978; Ogle, 1986; Stott, 2001). All the participant teachers discussed the value of this to varying degrees. Again, it was more visible in soft than hard subjects. The critical area of difference was *what* prior knowledge teachers considered important to find out. One teacher described how he engaged students in discussions about business practices in their home countries and used this as a way of introducing New Zealand business practices. This validated alternative points of view and had the additional benefit of allowing EAL students a voice to address any negative cultural stereotypes that may have been held by their classmates. The teacher of religion used students' prior knowledge as a context-embedded starting point from which she could build abstract understandings about the relationship between architectural form and function (Cummins, 1982). She began with her students' varied experiences of individual churches, then after a visit to local churches, encouraged the class to cooperatively develop comparative and analytical thinking about the function of church architecture and capture this in a power-point show. Another teacher applied the same principle but in a more theoretical manner, using a brainstorm technique to revise specific topic knowledge before building new but related concepts about trigonometry.

Teachers systematically focussed on students' prior topic-related life experiences and/or subject content learning in order to make connections with new concepts. However, when this process was complicated by EAL students arriving in a class with limited records from previous schools, or by students' limited ability to express their understanding in English, teachers relied on their curricular experience to evaluate the students' level of subject proficiency. Many teachers felt

that their own judgements of the fit between students' earlier educational experiences and current curricular demands held more meaning than any international school reports that might arrive with learners. Furthermore, few teachers sought information about students' linguistic proficiency. One commented that there was no point in doing so because he would not understand the significance of any linguistic data he was offered. Others also appeared doubtful that it would be useful to access any student data in addition to that which they themselves collected. As a result, when confronted with EAL students who were not ready to respond to their questions in English, teachers reported pressing on with the new topic and at the same time closely observing students to try to determine the extent of their subject knowledge. Content knowledge was the priority in every case and only two of the teachers reported asking ESOL or bilingual staff for details about students' English language proficiency.

This suggests that teachers were not aware that reports on students' language proficiency might be useful in informing their teaching (Hammond & Gibbons, 2005; Ministry of Education, 2008). It also indicates that teachers may not have realised that language proficiency often develops inconsistently across the four skills, with receptive skills frequently developing in advance of productive skills (Carrasquillo, et al., 2004). Nor did teachers fully appreciate the cognitive load carried by new EAL students who are forced to engage in multiple mental translations in order to process information between their L1 and L2. These aspects of bilingualism make it common for students to understand more than they can say or write (Swain, 1996). ESOL staff, if consulted, might have shared this information with their colleagues along with students' prior subject experiences (through student records from the home country), and provided a benchmark for the learners' level of English. Subject teachers had little interest in building a collegial relationship with the ESOL department, yet ESOL staff may have been able to provide advice on how to teach proleptically to scaffold students, using strategies such as graphic organisers, writing and speaking frames (Gibbons, 2009; Walqui & van Lier, 2010). This option was only given serious consideration by two of the seven teachers.

Thus, while teachers recognised that it is important to build on students' prior knowledge, they did not extend this to establishing students' prior learning in their L1, nor did they value data relating to students' current language proficiency: knowledge which could be used to inform the activities that scaffold EAL students into subject literacy and track students' progress towards their cohort (Torgersen, Houston, & Rissman, 2007).

Literacy or language learning: What's the difference?

A reason why curriculum teachers did not generally seek advice from ESOL colleagues may have been because they felt that their good subject teaching was sufficient to meet the learning needs (including the literacy requirements) of all students in their classes (Harper, de Jong, & Platt, 2008). Most of the teachers referred to student literacy at some point during the study. But although *literacy* is frequently discussed in schools, and the participants used the term confidently, they seemed to have only a hazy and somewhat negative view of what it might mean. Literacy seemed primarily to be seen as a set of skills that students lacked but required in order to access subject matter. It might also include students' general ability (or inability) to read and write, an area where students in remedial streams also struggle. Finally, it included academic skills required by EAL students, and these skills were seen to combine general and content literacy. There was a pervasive misunderstanding that learning an additional language is no different from acquiring academic literacy practices in one's L1, and teachers noted that many senior students struggle to master academic language. Teachers also expressed the belief that EAL students are in the same position and face exactly the same learning challenges as EL1 classmates with learning difficulties. In short, the teachers' beliefs about literacy related to the problems that students encountered when using reading and writing to express subject matter at school. They believed that academic literacy was likely to confound many senior students, but affected EL1 students with learning difficulties and EAL students in the same way.

Two of the teachers worked in schools where there had been a focus on literacy. The Secondary Literacy Project (SLP), a Ministry of Education initiative started in 2006[16], was designed to lift the literacy rates of English speaking students after PISA data revealed a 'tail of underachievement' in New Zealand schools (OECD, 2007). The SLP may have inadvertently created further confusion in teachers' minds about the differences between content literacy and learning through an additional language. Within the context of the SLP, ESOL was sometimes referred to as a 'sub-strategy' of literacy. This was not a useful descriptor because it suggested that within the superset of EL1 students needing literacy support (because they had failed to acquire the skills for using academic English in their L1), there lay a minority group of EAL students, disadvantaged by their bilingualism, needing the same literacy support. Clearly, the language issues faced by these two disparate groups are not the same: one group may be literate in their own language, and possess a number of self-regulatory strategies to aid their learning and extend their language acquisition schema, as research on transferability confirms (Cummins, 1979, 1992, 2000b), while the other group is likely to lack these metacognitive strategies for managing their own learning and have no alternative language system to draw on (Short & Fitzsimmons, 2007). Such a deficit view of EAL students is completely at odds with the intention of the SLP initiative and belies the cognitive and academic advantages enjoyed by many bilingual students (May, et al., 2004). While there is certainly an overlap in techniques that teachers can use to develop academic language skills in EL1 and EAL students, this does not mean that these students have the same linguistic strengths and weaknesses.

The confusion between 'literacy' learning and learning an additional language may have been exacerbated by the use of such assessment measures as Assessment Tools for Teaching and Learning, or asTTle (promoted by SLP and Assess to Learn [AtoL], a PD programme attended by

[16] Retrieved on 1 July, 2010 from: http://literacyonline.tki.org.nz/Literacy-Online/Interact2/SLP-Community/About-SLP

another participant). New EAL students are exempt from evaluation using asTTle because it is designed for students with English as their L1, but this exemption may give the impression to teachers that EAL students are not able to operate at the same cognitive level as their cohort. On the other hand, EAL students who may be able to operate at a similar curriculum level as their cohort may not be able to convey their understanding well in English and score poorly in any tests that make comparisons across a cohort. So, regardless of whether EAL students are excused from, or sit and score below their cohort using asTTle, they are likely to be viewed as needing remediation and accordingly placed in low-streamed classes. This phenomenon has been noted internationally. For example, when discussing the situation in the UK Bourne (2007) cautions against:

> …placing of early stage learners of English as a second language in 'low ability' groups, often alongside children with behavioural and other problems. In this way, these students are trapped into a remedial curriculum of facts and basic skills, while others are introduced to ways of accessing, interpreting and questioning knowledge, learning to control and produce the symbolic order. (p. 7)

An unexpected side-effect of having participated in language-focused PD was that one curriculum teacher in particular remarked that she had 'done' these interventions and there had been nothing new to inform her practice. Nevertheless, she did not display teaching behaviours conducive to developing language and literacy learning such as using oral language as a means of developing writing skills, or building learner independence by focusing on developing metacognitive strategies (McDonald, et al., 2008). Again, her attitude appeared to result from a mismatch between her preferred teaching approaches (arising from a hard discipline) and those arising from socio-cultural language research. It may also have developed from a perceived difference in status between her subject and ESOL which was intimated by her attitude to her colleagues in ESOL (Arkoudis, 2003; Harper, et al., 2008; May & Wright, 2007; Siebert & Draper, 2008).

Few of the teachers participated in literacy programmes and most referred to (second) language learning and literacy learning as if they were synonymous. The differences between EL1 students needing literacy support and English language learners are succinctly summarised by Short and Fitzsimmons (2007) after their survey of the learning experiences of adolescent ELL students in the USA. They compare these two groups of learners under six headings (p. 9). I add examples from my study, and adapt the last descriptor (which refers to curricula and structures specific to the USA) to reflect the situation in New Zealand.

1. **Position on the path to literacy**: EL1 students have often experienced academic failure and have been placed in low-stream classes. EAL students may enjoy a high level of literacy in their L1.
2. **Motivation**: EL1 students often have weaker intrinsic motivation than new learners of English whereas the teachers in my study remarked on the perseverance and high levels of motivation of the EAL students.
3. **Oral English proficiency**: EL1 students are normally fluent and are able to keep up with lessons presented orally. EAL students may need help to manage oral language in class. Teachers of soft subjects appreciated that oral and interactive tasks aid learning for EAL students. Teachers of hard subjects seemed to prefer that students develop independence by working on their own.
4. **Background knowledge of cultural and subject context**: EAL students may not have prior subject knowledge, so teachers need to construct this. Even if EAL students have prior subject knowledge, they may not be able to articulate it, whereas EL1 students may recall prior learning with teacher prompting. EAL students may not comprehend culturally situated references (such as those relating to sport or farming).
5. **Vocabulary terms with multiple meanings**: EALs may be familiar with just one of many meanings for a word. The puns used by several of the teachers fell flat when students

understood only one meaning for a word. However, EAL students are likely to apply metalinguistic and metacognitive strategies to solve linguistic problems since they are accustomed to operating across more than one language schema.

6. **Context in which literacy is developed**: Both groups of students are often placed in low streamed classes where the quality of teaching may be restricted rather than enhanced (Bourne, 2007). Some EAL students receive ESOL support, but skills developed in ESOL may be too general to be immediately transferable across the curriculum. In small schools there may be fewer staff available to either EAL students or students with literacy needs. There is no systemic focus on, or responsibility for, teaching language across the curriculum. Unlike the curriculum area *Learning languages* (foreign and community languages), there is no ESOL curriculum to acknowledge the development of EAL students' academic language skills.

So, both EAL students and EL1 students with literacy needs may struggle to achieve the NCEA literacy standards but for different reasons.

Nevertheless, while EAL students may benefit from generic teacher practices, and particularly from content literacy approaches designed for EL1 students, research in educational linguistics suggests that effective language learning requires additional elements that were not evident in many participants' teaching repertoires (Echevarria, et al., 2008; Gibbons, 2009; Walqui & van Lier, 2010). Where language was concerned, the participants appeared to be unclear about what aspects to teach (subject knowledge) and how to teach it (pedagogical content knowledge). Current understandings of how learners acquire language in school contexts arising from studies such as those discussed in Chapter 2 advocate a number of practices that fit within the belief systems of some curriculum teachers. The most obvious areas of overlap, particularly with teaching practices in soft subjects are: developing a flexible, Janus curriculum (Gibbons, 2008; van Lier, 1992); connecting students' experiences and subject matter (Chamot, 2005); moving from

context-embedded academic experiences towards the abstract and context-reduced (Cummins, 2000b); engaging students in quality interactions (Huang, 2004; Sharpe, 2008); and, developing students' metacognitive skills (Hammond, 2006). Yet, even though these overlapping practices benefit the learning of EAL learners, to be truly supportive of their learning, teachers need to add an explicit language focus. A focus on language involves: recognising the language demands of a subject (Coffin, 2006a); amplification rather than simplification of teaching materials in order to provide high challenge lessons with high support (Hammond, 2006; Walqui & van Lier, 2010); and extensive and methodical use of oral language including strategic use of students' L1 (Zwiers, 2006).

Disciplinary language demands: Knowing what to teach

A recent framework illustrating the knowledge base required by all teachers includes language as a component of "Teacher knowledge of learners and their development in social contexts" (Darling-Hammond, et al., 2005). The importance of language awareness as part of teacher knowledge is justified in this way:

> An especially important aspect of learners' development involves language. Virtually all school learning occurs through the medium of language… the very use of language allows people to acquire concepts and ideas and to sharpen their thinking. Teachers need to be aware of how language develops. They need to be concerned not only with developing students' general communication abilities in their first and second languages, they need to be able to help students engage in academic discourse, that is, to use the specialised language of the subject areas they are studying… children's linguistic differences are not a symptom of some inability to learn but a base of linguistic information to talk about, use and build from. (p. 34)

While the participants in this study felt confident in discussing ways to develop their students' academic vocabulary (Zwiers, 2008), they were less skilful in describing other issues relating to academic language development such as how language develops, establishing how well students could communicate in either their L1 or L2, or how to engage students in academic discourse. My data reveal that awareness of the language structures prioritised by a discipline, and specific pedagogies for teaching them, are not embedded in the repertoire of curriculum teachers'

professional knowledge. This accords with research indicating that one of the reasons why content-area teachers resist engagement in literacy instruction is because they do not know how (Siebert & Draper, 2008).

The participants all expressed views on the subject literacy demands of their curriculum area, interpreting the questionnaire items about "language demands" in very different ways. Generally, teachers were confident that they could recognise linguistic challenges in their subject areas. The term "language demands" was understood to mean spelling, vocabulary and using logical connectors (such as *because* and *therefore*); but technical vocabulary was considered the biggest challenge for EAL students. This was unsurprising in that, "A common misconception of academic language is that it is just a long list of key content words… Yet content vocabulary …is just one dimension of academic language" (Zwiers, 2008, p. xiii). Two of the teachers also recognised that high frequency vocabulary used in disciplinary-specific ways could cause confusion to learners, citing examples such as *bank* and *nature*.

Second to vocabulary was teachers' concern that students struggled to progress from rote-learned or formulaic structures that would earn them a maximum grade of Achieve, to a description or an explanation that would result in a Merit or Excellence grade. They realised that this was a specific academic style of writing that required explicit instruction. Several teachers had developed their own ways of drawing these different text-types to students' attention by using mnemonics to remind students of the components of a paragraph (Identify, Explain, Question), or by sharing with students a systematic process of analysing questions in order to respond with appropriate subject matter.

Beyond these two significant areas of technical vocabulary and writing an explanation, language challenges were either overlooked, disregarded or considered to be an issue outside the remit of

content instruction and in the domain of ESOL teachers. Several teachers recommended sending students to the ESOL teachers to learn writing skills. So, what additional language demands were overlooked? Research into educational linguistics indicates that "to develop the advanced language skills necessary to communicate for academic purposes, ELLs often require **conscious attention** to the grammatical, morphological, and phonological aspects of the English language" (Harper & de Jong, 2009, p. 154). A simple analysis of the handouts, oral instructions and whiteboard notes from the classes I visited revealed a number of grammatical and morphological language features that did not seem visible to the teachers. Teachers overlooked the importance of identifying language demands and language goals; components of text types; linguistic realisations of substantive structures; and syntax. Because teachers were not aware of these features, they were unable to share them with students.

Language objectives

While content learning objectives derived from the *New Zealand Curriculum* (Ministry of Education, 2007a) were shared orally or in writing in every class, not one teacher drew students' attention to the language skills that would be necessary to achieve them. Including language objectives requires teachers to recognise what elements of their teaching will necessitate particular language skills. Language objectives draw students' attention to academic language by understanding and clarifying how meaning is shaped by different language forms. In other words, a language objective is not an additional task for the teacher, but it allows the teacher to provide students with an explicit means to achieve a curricular end. Language objectives are expected to be observable, comprehensible and related to the key content concepts of the lesson. In addition, language objectives should require students to attend to a language skill/function that they have not mastered, and students should be able to assess the extent to which they succeed in it (Echevarria, et al., 2008). For this to happen, the teacher and students should know the learners' current language proficiency, or baseline **i** data to which the teacher can add **+ 1**. The teachers in this study did not, and could not, explain the implications of any information shared with them

(such as reading age or receptive vocabulary level) on the learners in their classes. This suggests that a balance between language and curricular instruction is unlikely until teachers learn how to recognise the language demands of their subject.

One teacher introduced a jigsaw reading task to her class, but although this provided a preview of the activity the class would undertake, there was no discussion of how the jigsaw activity would achieve the content learning objectives, or which skills are developed by using this technique. Ideally, she might have pointed out to students how they would have to *read from their notes on the grief cycle, write and draw a summary of these notes, and then orally share the summary with other students*. Each of these is a language skill working to achieve a content objective. Completing this task would mean that students had to read, write, listen and speak about the grief cycle. It would also mean that they had to share information repeatedly and this would aid memorisation through message redundancy (Gibbons, 2002). Such explicitness also builds metacognitive skills in that learners are required to notice how they are learning. "Noticing language, even when it appears to be transparent, is essential for teachers committed to supporting the general intellectual and specific subject matter competencies of students at all levels" (Lee, et al., 2008, p. 127).

Components of text types or genres

Extensive research has been carried out internationally to analyse the features characteristic of the text types of different curriculum areas (Martin, 1993a; Schleppegrell, et al., 2008; Veel, 2006). 'Explaining' is one of the most distinctive genres used for academic purposes (Knapp & Watkins, 2005; Paltridge, 2000). Teachers of economics, accounting and chemistry discussed the importance of constructing a coherent explanation paragraph in their subject domain. Each teacher talked about deconstructing the examination questions and how the explanatory paragraph needed to move beyond the relatively superficial level of a description (information report) to gain a grade of Excellence. They understood that to do this well, writers would need to

use appropriate connectors, and one teacher planned to use split sentences as a means of encouraging students to notice these significant text features. What was less clear was the connection between the content and the purpose of the paragraph.

The specific elements of an explanation differ from discipline to discipline. Nonetheless, there are features that students can be taught to recognise and reproduce in their own writing. Genre-related teaching has been criticised for potentially generating 'cookie-cutter' texts from templates, but before students can critically manipulate genre forms to achieve their personal purposes, they need to undertake an apprenticeship to master the norms of their subject (Devitt, 2004). A few of the participant teachers were aware of the structural features of a four-part explanation like: **s**tatement, **e**xplanation, **e**xample and **d**iagram (SEED). The statement and example parts of the paragraph usually require the writer to use relating verbs: (T*here* ***are*** *positive and negative ions*) to describe the characteristics of the phenomenon under scrutiny, in the timeless present tense. The purpose of the explanation part of the paragraph is to add details about how or why a phenomenon occurs. This requires cause and effect structures such as *This happens because…,* and conditional clauses such as *If…, then…*. It is also likely that this text type will use generalised participants such as *auditors* or *metals* and avoid using the first person (*I*). Many explanations will also use the passive mood rather than active constructions (*covalent bonds* ***are used****…*). The elements briefly described are examples of text features apparently 'invisible' to subject teachers, but of use to learners who are in the process of mastering the academic code of their subject.

Capturing substantive structures

The connection between curricular modes of thinking, or substantive relationships, and language is another area overlooked by subject teachers. Substantive relationships are the paradigms, or academic functions, used by different disciplines to make meaning. These involve patterns of

thinking realised by particular language structures (Chamot & O'Malley, 1994). Table 5 illustrates these relationships evident in the observed lessons.

Table 7: Substantive structures and linguistic manifestations

Substantive relationships in different content areas with examples from observation and handouts		
	Substantive relationships	**Academic language used to show these relationships**
Accounting (See Appendix 9)	Numerical relationships using tables, graphs and calculations	*Go from…down to; less discount;, plus* *Dropped to zero* *So the next thing; goes in*
	Order of operations in sequence e.g cash flow chart	Imperative structures: *reconstruct; calculate; use X to…* Generalised participants: *customers; suppliers*
	Cause and effect	Conditionals: *When we sell goods, we credit…; If the debtor….* *Therefore; as a result* Reduced participle clause/passive: *Use x to calculate the cash collected and cash paid…*
	Synonymous technical terms	Nominalisation: *accounts receivable* High frequency vocabulary used in specialist ways: *receive; bad (debt)* *Debtors/ accounts receivable* *Cash payment / cash paid*
Automotive engineering	Processes/sequences	Process verbs in timeless present tense: *blows, amplifies, goes, pushes* *So, when, then, start off, the last* Prepositional phrases: *in a row, on the bottom, part way up* Definitions/ relative clauses: *this is the bit that spins…* Non-human participants*: the crankshaft; it*
	Cause and effect	*If… then* *When it goes down, it covers the inlet*
	Classification and comparison (2 stroke/4 stroke engines)	*Less/more, cheaper, but, like*
Economics (see Appendix 8)	Definition	*What constitutes a household?* *What is fiscal drag?*
	Generalisation and theorising	Nominalisation: *The inflationary spiral* Non-human or generalised participants
	Cause and effect / Evaluation	*As inflation increases, workers' wages have to increase* *Describe the effect of…* *Name one thing that changes supply?* Passive mood: *Is it caused by…?*

Substantive relationships in different content areas with examples from observation and handouts		
	Substantive relationships	**Academic language used to show these relationships**
Mathematics (See Appendix 11)	Comparison (between integral and area under a curve)	Process verbs in timeless present tense: *expand, differentiate* Phrasal verbs: *work out, take away* Imperative *you* or empty subject for instructions: *Find the value, calculate, determine*
	Matching symbols, words and concepts	*You must learn that g'(x) is going to be called the integral of x.*
	Order of operations/process Problem solving	Conditional forms to show sequence: *When we differentiate, we usually…* *So now we calculate... and then we add…* Timeless present used with generalised inclusive '*we'*
Religion (see Appendix 10)	Connection with personal experience Degrees of emotion	Use of first person (I) Expressions of feeling: *heart-breaking, anxiety* Mental processes*: feel, think, believe* Modality: *They may wonder if they will ever recover…*
	Analogy Symbolism and metaphor	*The trough is like a horse-shoe* *This represents…* *How would you draw that? Spring or a new start.*
	Synthesis	Complex sentences*: While they may feel alienated, people in grief need…* Generalised participants
Science	Definition/ Classification	Passive mood: *Atoms are held together* Conditional: *if it is not a solid or a liquid…*
	Greek and Latin derivatives	Affixes: *delocalised, electrostatic, ionic, metallic, non-metallic,*
	Compare and contrast (qualities of metals) and classification	Abstract nouns/ nominalisation to show state: *Electronegativity* Qualifying adjectives: *ionic, metallic*
	Word and symbol used to describe element or state	H for hydrogen = for covalent bonds
Tourism	Compare and contrast	*Think of the differences between living in Osaka and New Zealand?* Descriptive features Comparatives and superlatives: *More, less, the most unusual*
	Classification	Generalised participants*: Houses, they, Australians* Passive mood: *Houses have to be organised…* Timeless present tense: *They use chopsticks*
	Definition	Relative clauses: *A commercial attraction is one that you pay for*

This table briefly illustrates how substantive structures are frequently manifested linguistically in patterns that teachers may not notice. These structures regularly signal high-order academic thinking in addition to the use of technical vocabulary, and involve grammatical constructions that are normally mastered at later stages of students' second language acquisition, such as using the passive mood, nominalisation and embedded relative clauses (Ministry of Education, 2008). Teaching syntactical structures, like cause and effect or conditionals, in the context of a subject lesson would enable students to notice and effectively appropriate these forms in content-specific ways. Research on critical literacy practices records how successful students perceived that:

> text was structured differently across the content areas and how this knowledge assisted in the meaning-making process. In explaining this, one student noted that it was important to read history as a logical progression of events in which the explanation of one event was built upon previous events. (McDonald & Thornley, 2009, p. 60)

and that students realised that they needed to "take the position of the historian or the scientist in interrogating that which they read based on what they knew of the discourse of those disciplines" (McDonald & Thornley, 2009, p. 61). These highly successful students managed to make connections without explicit guidance from their teachers, but learning would be assured for more students if teachers understood how to be explicit about the relationship between syntactic and linguistic structures. If teachers were aware that their discipline uses specific language patterns, they might be more likely to take ownership of language (Siebert & Draper, 2008). The challenge is how to raise teachers' awareness and interest if they currently perceive that knowledge about language lacks the disciplinary clout of their own subject, and if they lack metalanguage to share language patterns with students. Teachers are also unlikely to seek new ways of teaching if they do not perceive any need to change their current practice (Moje, 2008; O'Brien & Stewart, 1995).

Syntax

Syntax refers to the word order of an utterance. A context where syntax can be challenging is in the difference between the way that a formula is written and read in chemistry and statistics. In the statistics class I observed, the teacher asked rhetorically: "What's the formula for a trapezium? Half the sum of the two parallel sides times the perpendicular distance between the two parallel sides." As she said this aloud, she drew a diagram conveying the information in a graphical way. Furthermore, if she had not been problem-solving what to do if you forget a formula, she could have written the formula numerically: $\frac{1}{2}(a+b) \times h$ as she did at other times during the lesson. Unlike conventional written sentences, a formula is rarely read left to right and item by item. Throughout this lesson on integration there was a contrast between the word order used in talking about the problems, and the figurative and diagrammatic way that the same problem was drawn and written numerically. The trapezium example shows three different ways of conveying exactly the same information. Thus, one of the greatest language demands in mathematics for EAL students can be the mismatch in syntax. This fits with findings by other researchers that logical structures including implication, conditionals and negation cause problems for EAL students, because these are realised by the linguistic structures of prepositions and word order (Fang & Schleppegrell, 2010; Harper & de Jong, 2004; Neville-Barton & Barton, 2005). These students may have the additional challenge of relating the sentence structure used to talk about mathematics in English, to that preferred in their L1. However, the correspondence between words and meaning is only graphophonic in the oral example. This can be an advantage (outside word problems) to EAL students who may 'read' a formula in their own language and do not need a great deal of English to make sense of the mathematics. However, if a mathematical relationship is embedded in a word problem, the cultural context chosen by the problem-writer may add an extra complicating layer to confound the EAL learner, for example a problem using the context of sailing or trig stations. One of the teachers talked about teaching learners to recognise verbal cues in problems that indicate particular statistical relationships. I was not able to observe this in practice, but Neville-Barton and Barton's (2005) research suggests that this is very important in order to

maintain students' motivation, as confronting a word problem with unfamiliar vocabulary can be highly demotivating. Another teacher made no connection with how lack of syntactical alignment between formulae and spoken or written problems might inhibit students' understanding.

This statistics-specific example of a language demand reinforces criticisms of generic language or literacy PD where highly contextual language challenges may be overlooked (Siebert & Draper, 2008). It also raises the issue once more of how best to combine content and language expertise.

Perceptions about how to teach language

In addition to their uncertainty about what aspects of language to teach, teachers were not clear about how language is taught. They generally felt that language teaching involved simplifying, was likely to be boring, and had little relationship to content teaching, so could be left to the ESOL staff. Many teachers also underestimated the importance of interaction.

Language teaching entails simplifying

Contrary to the current emphasis on providing students with both high challenge and high support (Gibbons, 2009; Hammond & Gibbons, 2005), most participants seemed to equate language teaching to teaching a limited curriculum. Several teachers felt that EAL students benefited from reduced content and explained how they supported students by removing content deemed challenging. Indeed, one teacher assumed that modifying materials meant reducing content to simple concepts, while another removed academic vocabulary (including highly useful words like *analyse*) from assessments. Neither teacher had developed a plan for scaffolding their students up to the level of their classmates. Another simplifying technique involved dispensing with the textbook and issuing alternative notes, as opposed to extending student skills by employing reading techniques to access the textbook and/or co-constructing notes with students.

This notion of reducing rather than enriching and amplifying teaching materials for EAL learners contradicted teachers' assertions that they hold high expectations for their students. The risk of simplification is that "using low-demanding tasks [has] a self-fulfilling effect as it creates an environment where students' opportunities to learn are restricted" (Wedin, 2010, p. 181). Learning is further restricted where there is no opportunity for metacognition, or reflection on how to learn, as such opportunities are reduced where conceptual learning is limited. Ideally, teachers would look for ways of "supporting-up the students to engage with intellectually challenging curricula, rather than simplifying the curriculum" (Hammond, 2008, p. 150), but supporting students to meet intellectual challenges requires teachers to believe that EAL students are capable of achieving academic success. "Supporting-up" students also requires teachers to be aware of how students learn in and through an additional language, and what techniques are likely to accelerate learning.

Language teaching is boring

Teachers seemed to recall their own unsatisfactory prior experiences of learning L1 grammar, and/or learning a foreign language. In addition, they believed that their students expected a language focus to mean rote-learned grammar. They did not want to teach 'like that'. Again, this suggests that, despite developing a range of content pedagogy, they had no depth of language pedagogy. One teacher's attitude was particularly interesting in that despite adopting a lively and interactive teaching style to convey subject matter, he doubted that he could use similar techniques and teach writing with equal flair. While he was insistent that students should interact to master content understanding, he was adamant that they wanted a traditional approach to language learning. This perception was also expressed by another teacher who enjoyed the opportunity to speak and negotiate output as a new learner of te reo Māori, but did not transfer this personal experience to facilitate learning for her EAL students. She was very clear that she herself learnt best through speaking, but told me that her students would not like it. Others may not have learnt a foreign language or studied the structure of English at school, yet had still formed negative impressions of what teaching language might entail.

Language teaching operates separately from content teaching

A number of the teachers seemed to believe that it is possible to separate the teaching of content and language, which is not surprising given historical ideas about how languages are learned, and also given the departmental compartmentalisation of secondary schools. One teacher mentioned that students began studying his subject once they had finished attending classes at a language school. This suggests that they had 'enough' English to manage in the mainstream. When speaking about the successful partnership operating between his department and ESOL staff, another teacher said that his staff taught the content while ESOL teachers played a support role as: "It was really just the language that they were helping with". Examples of the language support included: "Definitions, words, those sorts of things. Just everyday language terms." This indicates that the teacher believed in the notion of general English, and considered that this could be taught separately from the main business of content instruction. This belief was spread amongst teachers of both hard and soft subjects and operates in direct contrast to the direction of current socio-cultural research into language and learning. Educational linguists believe that: "The relationship between academic language and content is probably reciprocal. That is, they complement each other and together contribute to a student's academic achievement" (Goldenberg & Coleman, 2010, p. 92). If thought develops through language and languaguing (Swain, et al., 2009), and various ways of thinking are prioritised by specific disciplines, it makes no sense to teach language outside the content of a discipline (Vygotsky, 1962). Language learning involves developing flexible and appropriate registers for communicating different social purposes and as such has no content of its own. Yet if teachers underestimate the crucial role of language in thinking and learning, there is no incentive for them to prioritise building respectful relationships with ESOL colleagues or taking steps to develop their own skills in teaching language and content. Unless teachers embrace the view that language is central to learning, reciprocity is unlikely.

One teacher's beliefs about language teaching differed from the others'. She remembered teaching approaches she had learnt at teachers' college and talked about "getting out her ESOL stuff" when faced with multilingual classes. This participant reported that as a student-teacher she had not prioritised learning how to teach EAL students because she had assumed that most teachers did not need these skills in classes where students were predominantly from English L1 backgrounds. Once she began working as a teacher she realised that EAL students were part of every class and it was important to meet their needs. In response, she asked for support from the head of ESOL and also investigated online sites. She found that interactive strategies like dictogloss, KWL charts, three-level reading guides and group writing worked well to develop students' content and language skills (Ministry of Education, 2004; Ogle, 1986; Wajnryb, 1990).

Misunderstandings about the role of language and how EAL students should be taught may derive in part from participants' teacher education. The teacher (above) and one other were relatively new graduates, completing their third year of teaching. The other teachers had been in the workforce for much longer (between 7 and 21 years). This teacher drew on her relatively recent experience for tools to equip her in managing the linguistic diversity in her classes. She was influenced by her pre-service education and specifically referred to skills gained from a *Language across the curriculum* course which has since been discontinued. How will new teachers learn to balance language and content if it is possible for student teachers to complete teacher education without explicit or extensive instruction in how to meet the needs of their EAL students? In her review of initial teacher education, Kane (2005) emphasised that: "There is a notable absence across all graduate profiles of explicit reference to graduates having knowledge and understanding of working with students for whom English is a second or subsequent language" (p. xv), and, "There is an absence within all but very few conceptual frameworks of any reference to second language learners and the needs of new immigrants as a particular feature of the New Zealand educational context" (p. xiv). This is an area of concern even though the Graduating

Teacher Standards require such competencies (New Zealand Teachers Council / Te Pouherenga Kaiako o Aotearoa, 2007). Although the other teachers did not mention the influence of their pre-service teacher training, the composition of teacher education courses merits further investigation (Harper & de Jong, 2009).

Two of the more experienced teachers, who were less likely to draw on pre-service teacher education at this stage of their careers, had contrasting opinions of the value of in-service PD they had encountered. One had participated on a short course initiated by his subject association where any language teaching strategies introduced by an ESOL advisor were embedded in subject content. He spoke very highly of what he had learnt and although the course took place several years before my study was conducted, he said that he still used techniques he had learnt. This fits with other research suggesting that subject specialists need PD with a language focus to be clearly embedded in their discipline (Siebert & Draper, 2008).

The other teacher also undertook language-based PD grounded in her discipline and facilitated by an ESOL advisor. This used a DVD resource depicting secondary teachers employing interactive and language-focused strategies in the context of their subject classes. One teacher on the DVD was a teacher of year 12 chemistry (the same as my participant). Nevertheless, the chemistry teacher in my study was dismissive of the PD, commenting that there was nothing new to learn as it was pitched at beginning teachers who were less familiar with suitable teaching strategies. This contradicts research supporting the contextualisation of PD, yet it is consistent with the findings of this study. While there are many possible reasons why this teacher did not engage with the PD, one of these might be that this participant prioritised her content pedagogy over that deriving from a different and possibly tangential field (Timperley, 2008). Simply, she may have doubted the value of adapting language teaching practices to a subject in which she has many years' experience, particularly given that chemistry is a hard, knowledge-based subject.

Thus, there seem to be a number of factors that influence teachers' beliefs about the role of language in their subject teaching. These include: teachers' own language learning, their pre-service teacher education and subsequent PD. However, it seems likely that one of the strongest influences is the teachers' dominant discipline, particularly if their content pedagogy differs from language teaching pedagogy. This presents a challenge to planning teacher education.

It was not easy for teachers to describe specific teaching techniques to support language learning. One response to the question of how best to teach was using 'scattergun' approaches in the hope that either individual strategies or the sum of many different strategies would make content comprehensible to learners. At times it seemed that teachers selected teaching strategies to suit their own teaching and learning styles rather than because they were necessarily evidence based. One teacher recommended using a range of different teaching strategies as the best way to suit a range of student learning styles. She explained that it was the combination of many different techniques that was effective, since every learner was likely to have a different preference. Research into educational linguistics agrees that students should have multiple opportunities to engage with new concepts through mixed and varied media (Echevarria, et al., 2008). However, there is an expectation that learning experiences are designed to provide a methodical and structured means to achieving a particular content and language learning end.

The necessity for interaction

Many soft disciplines originate from constructivist philosophies of teaching that advocate student interaction. Exponents of constructivism, including some of the participants, value the social connections and the scope for student engagement developed when group activities are carried out. The difference between this view of interaction and that from educational linguistics is that while soft disciplines may choose interaction as one of many effective possible strategies, it is a fundamental practice for achieving and accelerating language learning. Language learners need

multiple opportunities to rehearse new language forms in contexts where they and their peers can negotiate meaning by seeking clarification and rephrasing if necessary. If tasks are carefully designed, a small group situation may provide opportunities for EAL students to hear key concepts contextualised and ensure that learners contribute to the extent of their English proficiency (Ford, 1991; Johnson & Johnson, 2009).

Unfortunately, oral language has not traditionally been valued as a mode of communicating academic thinking. An indicator of this is the disproportionate number of NCEA achievement standards that assess learning through written literacy in comparison to the number that assess through oral or interactive tasks. For example, of the seven achievement standards available to assess level two chemistry in 2010, four specify a written examination, two require students to carry out analyses, and one involves mathematical problem solving. The last three could be assessed orally, but this is uncommon. It is therefore easy for teachers to underestimate the challenges of interaction on their learners. A contrasting international example that appraises the interactive demands of science assessments differentiates the skills required for individual, pair, small group and whole class participation; whether students need to manage interpersonal, interpretive or presentational skills; and which text types learners need to use (Bunch, Shaw, & Geaney, 2010). Different forms of interaction require different pragmatic skills. Further research shows how carefully crafted but challenging questions can encourage groups of students to develop academic modes of communication and allow them to appropriate "the language of ideas" (Bunch, 2009, p. 104). This overt understanding of the skills and uses of interaction was not evident among the participants in this study.

Modes of questioning appear to be shaped by particular disciplines. For example, the teacher of statistics used Socratic questioning to carefully lead her students through the steps required for integration. At first glance, the interactions appear completely dominated by the teacher who

positions herself as knower, holds the floor, and appears to ask questions to which she knows the answers. In fact, her questioning provides a model that draws students into the sequence required for integration:

> Teacher: What's anybody found? What have you noticed?
>
> Student: They all look the same.
>
> Teacher: Exactly. So, if I shade in that area there, and get that triangle, and work out the area of the triangle, if I integrate what my y is with respect to x, and find the definite integral from 5 to 0, I get exactly the same value…

In other phases of the lesson she explicitly advises students to use appropriate terms to describe this process, guiding them from less mathematical to very specific academic ways of speaking. This mode of interaction raises the issue of whether modelling in this very (hard) subject-specific manner provides sufficient support for language acquisition when the opportunities for students to participate and verbalise their learning are limited to working independently after the teacher demonstration. Studies in educational linguistics would suggest that limiting students' opportunity to speak also limits their opportunities to think and learn (Hammond, 2006). Research into mathematics education also recommends engaging students in oral interaction in junior classes, but is less clear about the role of teacher as facilitator in senior classes (Anthony & Walshaw, 2007).

The notion of extending students beyond their current proficiency is an important one if proleptic instruction is to occur. Carefully designed interactive tasks allow students to be scaffolded from the informal and interpersonal language they are accustomed to using outside school, to more context-reduced and theoretical language. It was interesting to observe how several of the teachers relied on careful task design to promote academic discussions amongst their students, stepping back to let students' interactions proceed without their interference. This tended to leave teachers a regulatory role (Christie, 1997), where their own utterances were restricted to

monitoring: “Who’s got number 6?“, “Write that down”, and “Five minutes to go”. In these instances, the teachers restricted their own input into any discussion until the final debriefing phase of the lesson when it was time to check the class’s general understanding. At this time teachers were more inclined to ask for clarification and ask students to expand on their answers.

Teachers seemed to find it a natural process to encourage their students from colloquial toward academic versions of a phenomenon, for example moving from the active verb ‘squash’ to the abstract noun ‘compression’. Progression from familiar to academic language interactions may also occur in students’ L1, which can provide a sound foundation for learning (May, et al., 2004). I observed one teacher instructing a learner to translate for his classmate, but otherwise, all the classes were conducted solely in English.

In other words, students can learn to build from familiar oral language to more abstract written forms of discourse through interaction (Gibbons, 2009; Trumbull & Farr, 2005). For teachers of hard disciplines where teacher-directed or independent learning is valued, it may be a challenge to engineer an active speaking role for students. Because this study focused on the teacher’s role in classroom interaction, there are limited data illustrating the nature of EAL students’ oral responses generated by cooperative tasks (mentioned in Chapter 3). Future research is needed to analyse student-student and teacher-student interactions in order to evaluate the impact of task design (Pica et al., 1987; Swain et al., 2002).

Summary

This discussion looked at ways in which pedagogical content knowledge aligns to, or conflicts with, practices supporting language learning. Generally, teachers of hard subjects appear to perceive a greater distance between their ways of knowing and teaching and those preferred by language teachers. Teachers coming from long-established disciplines also find it hard to open their

teaching to practices informed by research outside the conventional curriculum. ESOL and teachers of ESOL have no curricular authority, which makes it difficult to establish meaningful partnerships with curriculum teachers. This is exacerbated because curriculum teachers 'don't know what they don't know' in relation to language, and even in relation to the language of their own discipline where they are otherwise considered expert teachers. Pre-service professional development is thwarted when courses that focus on language acquisition are removed from initial teacher education, and in-service PD fails if teachers do not see the value of new learning. Understanding about how best to teach bilingual students is also confounded by teachers' confusion between the challenges to learning for EAL students and for EL1 students with learning difficulties. These issues are serious because without a systematic and informed focus on language instruction, many EAL students will not achieve academic success in New Zealand schools within the five-year duration of their secondary schooling. Instead, they are likely to be grouped with low-achievers, fed a limited curriculum, and leave school prematurely with few meaningful qualifications.

The final chapter looks closely at the implications of this discussion on policies for teacher education that attempt to bridge the gap in teachers' understandings between the importance of teaching subject matter and the value of teaching language.

8. Issues raised by this study: Bridging the epistemological gap

All of the teachers in this study seemed to care deeply about the education of their students. All of them believed that EAL students could successfully study in their additional language, and admired their students' perseverance and work ethic. They reasonably assumed that, given time and practice, EAL students would perform at a level equal to, or better than, that of their EL1 classmates. However, teachers did not grasp that language acquisition is a matter of urgency because secondary EAL students do not have time to acquire academic language at a natural rate. Students need help to accelerate their learning to achieve academic success within their secondary school years. Teachers did not realise what a significant part they could play in accelerating these students' learning. This may have been because they did not understand the interrelationship between language and learning, or because they had not learned how to address the learning needs of EAL students. Indeed, teachers' grasp of language demands was generally limited to the challenges posed by technical vocabulary. Since specialist vocabulary learning is an issue for all new learners of a discipline, teachers did not see the needs of EAL students as substantially different from those of the other students in their classes. Perhaps for this reason, teachers mistakenly believed that they were actively supporting EAL students, despite having limited knowledge about language acquisition and the relationship between language, thought and learning.

Teachers' misplaced confidence about their proficiency in teaching language is likely to have major repercussions in the current educational climate in New Zealand. In 2011, new functional literacy assessments will be available in New Zealand schools for learners at year 11[17]. This is a philosophical change in direction because literacy will no longer be assessed almost exclusively

[17] NZQA, retrieved on 23 July, 2010 from: http://www.tki.org.nz/e/community/ncea/pdf/lit_num_10jun10.pdf

through the domain of the English curriculum, and students' academic language proficiency may be evaluated using work completed for authentic purposes within other curriculum courses. Students whose interests and expertise lie in disciplines outside English may have their academic literacy assessed through a curriculum area of value to them. This is an important development in that it recognises the systemic functional linguistics tenet that 'effective' language use is determined by specific contexts (Halliday & Hasan, 1985). Literacy practices can only be defined in relation to a specific purpose and audience, which, in the setting of a school, means that language accuracy is shaped according to disciplinary preferences.

The findings from this study indicate that subject teachers find it difficult to recognise language features, which raises two challenging issues for the implementation of the new literacy standards: who will *assess* students' subject literacy, and who will *teach* subject literacy?

Schools are currently grappling with these issues and the possible contenders for these two roles seem to be English teachers, ESOL teachers, and subject teachers. But none of these teachers is fully qualified to perform these tasks (Stoller, 2008). Like other secondary teachers, English teachers are primarily, and possibly exclusively, teachers of their curriculum area. To master the language demands of English, students must know how to use and understand others' use of literary devices such as personification, theme and metaphor which are specific to this discipline. While English teachers may understand the literary demands of their curriculum area, they have not necessarily learnt how to recognise the wider literacy demands of their own or other curricular contexts. Trained ESOL teachers have usually learnt about how an additional language is learned and which elements of academic language challenge learners at different stages of language acquisition. They could certainly evaluate work generated through other subjects using the new generic literacy assessments, but they are rarely equipped to teach the subject matter of a range of different curriculum areas, particularly if they were primary trained and/or lack a

degree (Fang & Schleppegrell, 2010). Finally, subject teachers are expected to have expertise in teaching their subject matter, but they appear to have little appreciation for how students learn academic language, and/or acquire another language. Their focus is on building disciplinary knowledge rather than building "understanding of how knowledge is produced in the disciplines" through conscious manipulation of language (Moje, 2008, p. 97). These issues should be of concern to schools preparing to implement the new literacy assessments.

Secondary teachers have strong disciplinary knowledge. They are recognisable by, and hired for, their specialist content qualifications. In contrast, since ESOL does not have a curriculum and has developed as an ad hoc subject, there is no defined pathway for EAL learners and possibly as a result, ESOL teachers' academic qualifications have not been subject to the same level of scrutiny. Both academic and managerial staff are likely to lack awareness of the crucial role of language in learning and thus may be responsible for hiring staff without investigating their qualifications for language teaching (Creese, 2006). Indeed, ESOL teachers have often evolved into their positions from such backgrounds as foreign language, English, and primary teaching, and do not necessarily possess specialist qualifications. This leaves schools with patchy advocacy for language learning and language learners. In addition, low expectations of their specialist (language) expertise may place well-qualified ESOL teachers at a disadvantage when they do wish to take a leadership role in managing language across the curriculum (Stoller, 2008). So, the issue of explicit cross-curricular language teaching and the assessment of literacy should be of concern to schools, but it may not be given serious consideration if teaching EAL students is seen as a low-level task that a non-specialist teacher, or teacher aide, can perform.

The overarching question is: how can teachers *learn* to teach the language of their discipline and thus provide the explicit focus on contextualised language that is currently missing from subject teaching. No simple answer emerges from international literature, but aspects of a solution may

include attention to pre-service teacher education, in-service teacher education, the qualifications of ESOL teachers, and models for teacher collaboration.

Implications for pre-service teacher education

Secondary teachers' beliefs and knowledge are initially shaped by detailed disciplinary study undertaken at university over three or more years, followed by participating in pre-service teacher education usually for one year. The Graduating Teacher Standards, used as guidelines for the content of teacher education, require new teachers to learn to teach EAL students (New Zealand Teachers' Council / Te Pouherenga Kaiako o Aotearoa, 2007). Despite this, Kane's (2005) study shows that institutions across New Zealand neglect to provide courses on teaching EAL learners in their initial teacher training. Some institutions offer elective courses labelled 'ESOL' or 'Teaching diverse learners' or 'Language across the curriculum'. Unlike the situation in other countries, there is no defined content for these discretionary courses, so content may range from EFL 'a structure a day' approaches, to including a lecture on language learners within a course on students with learning disabilities, to a systematic and thorough analysis of how students learn through an additional language (Davison, 2001b; Stoller, 2008). Other institutions assume that each content area will monitor the teaching of its specific academic language features. Regardless of which option is taken, instruction about second language acquisition and the teaching of academic language are addressed in a piecemeal manner or not at all.

This oversight may signal to new teachers that language is of little consequence in comparison to subject matter, or, that there are few connections between language and disciplinary thinking. In this way, the status quo, where secondary teachers operate in silos of disciplinary expertise, is maintained. In addition, the same notion is perpetuated amongst teacher educators who, like their students, may be unaware of "the varied ways language constructs knowledge in different subjects" (Fang & Schleppegrell, 2010, p. 591). In New Zealand, as in the USA, it is "imperative

that teacher preparation programmes examine the knowledge, skills and dispositions that mainstream teachers need to develop in order to work effectively with both ELLs and fluent English speakers" (de Jong & Harper, 2005, p. 101).

One of the participants directly stated that she had learnt about language at teachers' college, and drew on that learning when she realised its value as a relatively new teacher. The first implication of my study is that if curriculum teachers' beliefs about language learning are to change, initial teacher education needs to include explicit and compulsory instruction to new teachers about how to recognise and teach the language structures of their subjects. Furthermore, initial teacher educators need to assess better the extent to which their courses address the values expressed in the Graduating Teacher Standards (New Zealand Teachers' Council / Te Pouherenga Kaiako o Aotearoa, 2007) in practice, as these include the requirement that new teachers are able to meet the needs of EAL learners. Without these actions, it is unlikely that courses and therefore new teachers' attitudes to language learning will change.

Implications for in-service teacher education

There is no current imperative for New Zealand teachers to undertake ongoing PD, although it is a component for professional registration in other fields like nursing and law (Education Workforce Advisory Group, 2010). Nonetheless, PD is recognised as an integral part of teacher enquiry and knowledge-building (Timperley, Wilson, Barrar, & Fung, 2007). Since disciplinary knowledge is highly valued amongst secondary teachers, a logical place to initiate change is through disciplinary communities of practice (Becher & Trowler, 2001; Wright, 2007). Since the 1990s, the Ministry of Education has sponsored a variety of cross-curricular interventions designed to lift secondary students' literacy levels by drawing links between literacy strategies and curricular language use. Some language and literacy projects have included Building Blocks, Aim Hi, the Secondary Literacy Project and the Pasifika Literacy Programme. These set out to engage

disciplinary teachers by employing certain common features. Each began by examining student data (gathered using such assessment tools as NCEA for senior students and asTTle, Progressive Achievement Tests (PATs) or STAR Supplementary Test for Achievement in Reading for junior students); analysing data to establish which particular students scored below cohort; implementing subject-embedded reading and writing strategies under the leadership of a designated literacy team; then re-evaluating the progress of target students. Schools opted into such programmes or were advised to do so after negative Educational Review Office reports. Subsequent studies revealed that the long-term take-up of literacy practices by subject-teachers has not been great, concluding that it is very difficult to reshape curriculum teachers' beliefs about teaching (May, 2007; May & Wright, 2007; O'Brien et al., 1995; Siebert & Draper, 2008).

Two recent Ministry initiatives directly affected the participants of this study: a) TESSOL scholarships awarded to curriculum teachers of Pasifika, international and refugee students; and b) PD based on the *Making language and learning work* DVDs (Ministry of Education, 2007b). Two participants had taken part in these initiatives with mixed success which seemed to reflect how prepared they were to engage with a process of change to their practice (Timperley et al., 2007). The scholarship recipient was open to professional learning. He had initiated his scholarship application because he could see a need to develop further skills to support the EAL students in his classes. Although he had not yet completed a TESSOL qualification, his pedagogical choices were visibly expanding. He set up opportunities for interaction in his class and spoke to the learners about how talking helped them to capture their thoughts and learn. He could see that there was new knowledge to learn about teaching language and so he was open to advice from the ESOL staff. The other teacher, whose department undertook ESOL-related PD, did not exhibit similar openness to learn. She was disparaging about the facilitator and the content of the PD. This attitude may have developed because she herself was very experienced and had not sought

PD, or possibly because she taught a hard discipline and so her preferred teaching approaches may have conflicted with those advocated for teaching language.

PD is likely to be sustainable when teachers engage with learning and new theory is integrated with their existing knowledge (Timperley et al., 2007). Because language and literacy does not fall within any particular teacher's domain, perhaps PD relating to language learning is more successful when it is sought by individual teachers, and conducted by teachers respected within their discipline. Otherwise, it may be sabotaged by "the clearly demarcated subject orientation of secondary schooling… which results in many subject-based teachers 'resisting' the whole-school aims of a literacy policy, assuming these to be the 'preserve' of the English department" (May & Wright, 2007, p. 374). It is likely that subject teachers who complete TESSOL qualifications will be the most suitable facilitators for their curriculum colleagues' learning. This is confirmed by Gray's (2009) study of TESSOL scholarship recipients within the same discipline who successfully worked together to plan lessons with an integrated focus on language learning. It would be interesting to know whether this professional planning was maintained over time and outside the extrinsic motivation provided by participation in Gray's study.

In analysing the processes involved for effective take-up of the Secondary Schools' Literacy Initiative (SSLI), May (2007) also acknowledges the challenge involved in persuading content teachers of the need to look at the role of language in learning and signals the importance of the school-based literacy leader. He considers that sustainable PD unfolds over three phases: establishing effective literacy practices, in which data are used to convince teachers of their role in teaching language; consolidating effective practice; then sustained monitoring of these practices. His claim that secondary teachers need more convincing of the relationship between language and learning than their primary colleagues is supported by these findings. Analysis of literacy data must clearly relate to student achievement in their curriculum area before they are

likely to take up any challenge to their existing practice (O'Brien & Stewart, 1995). Unfortunately, the teachers in this study were not interested in data relating to language acquisition and could not connect it to their curriculum area. Schools where teachers' beliefs were successfully challenged were likely to have literacy leaders who were highly regarded and given time and management units to support them in the task (Whitehead, 2010). Though these were literacy interventions, as opposed to PD on language learning in particular, the lessons learnt are transferrable. For curriculum teachers to acquire readiness for PD, they need to be persuaded by language-related student achievement data presented by a colleague with credibility.

Implications for ESOL qualifications

ESOL teachers have been identified throughout this study as the most likely experts in the field of educational linguistics. But is this always the case? A survey conducted by the Ministry of Education in 2002 revealed that only half of ESOL teachers in schools had specialist TESSOL qualifications (Ministry of Education International Division, 2002). A 2008 focus group study of ESOL teachers in one region suggested that little had changed regarding their uneven qualifications, loose job descriptions, and disparate departmental structures (Gleeson, 2010 unpublished). It is inconsistent that while secondary schools recruit qualified curriculum staff, there is no imperative to seek suitably qualified ESOL teachers. The very phrase 'suitably qualified' is problematic, as specific competencies in TESSOL have never been established in New Zealand. Even in the USA, standards for TESSOL were only prescribed in 2002, and yet TESSOL expertise is still underestimated or overlooked by curriculum colleagues and employers (Harper & de Jong, 2009). According to one definition, the establishment of a department is one indicator that a discipline is recognised within an institution (Becher & Trowler, 2001). The subject teachers in my study generally were uncertain about the function or configuration of ESOL in their schools. This was not surprising since ESOL operated as a distinct department in some of their schools, but

in others it was subsumed under Learning Support, or geographically and philosophically separated from the main school as a department catering only for international students.

The findings of this study strongly indicate that curriculum teachers do not recognise the expertise of their ESOL colleagues, and perhaps this is not surprising given uneven recruitment practices. It seems likely that some ESOL teachers are not qualified to a standard equivalent to that of their colleagues, that is, at least one specialist TESSOL degree in addition to a teaching qualification. EAL students deserve teachers with specialist expertise, and good teachers need a strong foundation of subject knowledge as well as a departmental structure in which to operate.

But what is ESOL subject knowledge? Despite the common misconception that it is 'just good teaching', there is a core of linguistic and cultural expertise that differentiates an effective ESOL teacher from other effective teachers (de Jong & Harper, 2005; He, Prater, & Steed, 2009). However, this knowledge is invisible to many educators. The issue of ESOL subject knowledge is exacerbated because there is no ESOL curriculum, which disadvantages ESOL teachers further in comparison to curriculum teachers. Students learning te reo Māori, foreign and community languages are all taught and evaluated using specialist curricula that acknowledge the cognitive load that learning an additional language places on learners. One major difference faced by EAL students in contrast to learners of foreign and community languages is that they must learn all academic content through the medium of their new language. In other words, they face double the workload of their classmates (Short & Fitzsimmons, 2007). Moreover, because students must use English to learn every other subject across the curriculum as well as learning to recognise components of this new language, the notion of an ESOL curriculum is extremely complex. While there are some general academic features commonly used in high school reading and writing, the specific academic language required of students depends on the subjects they take:

> As educational knowledge becomes more specialised and removed from students' everyday experiences, the language that constructs that knowledge also becomes more technical, dense, abstract, and complex, patterning in ways that enable content experts to engage in specialised social and semiotic practices. (Fang & Schleppegrell, 2010, p. 596)

Effective teaching of EAL learners (as opposed to any other learner) therefore requires teachers to evaluate the strengths and challenges provided by linguistic, educational and cultural elements from the learners' background as well as foregrounding the language features of specific content at a level **i + 1** of their current proficiency in English. This is a complex balance of stretching students both linguistically and cognitively in a meaningful content context.

The new literacy standards may provide a fairer assessment of EAL students' academic language proficiency because students will be assessed on the appropriate use of language forms they need to master to gain entry to a disciplinary community. Similarly, ESOL standards recognise the linguistic challenges faced by EAL learners and are content empty in allowing the skills of reading, writing, listening, speaking and interaction to be assessed using any appropriate academic transactional context. In contrast to standards in community and foreign languages which were designed for use in schools, ESOL standards originated from the adult learning sector and remain unit standards, while almost all other subject areas are now assessed using the higher status achievement standards. ESOL is unlikely to attain the status of an academic subject while it does not offer achievement standards. So, currently ESOL remains a collection of standards with less extrinsic value for students aspiring to gain university entrance, taught by teachers who may not have specialist training. This is not an encouraging scenario for ESOL teachers to work in if they are to raise curriculum teachers' awareness of the power of language over learning. Furthermore, it is not helpful for senior EAL students to opt out of ESOL when they still need explicit instruction to master academic English using the excuse that they can generate a higher grade point score for university entrance by completing achievement standards.

What might an ESOL curriculum look like? Mastery of a language means mastery of a set of skills and developing the socio-cultural awareness to choose appropriate forms for a particular purpose and audience (Harper & de Jong, 2004). Like soft broad subjects, there is no defined subject matter. New learners of English need systematic and intensive language instruction to build foundation language skills and strategies. At this stage of their learning, an ESOL curriculum would use curricular concepts as a means for intensive focus on language skills which the teacher would select and sequence according to the learners' levels of proficiency and readiness. This is a necessary step to support bilingual students to develop connections between their L1 and L2 before extensive mainstreaming takes place. Systematic instruction in language for school is also required to ensure that "hole language" does not develop (Davison, 2001b, p. 66). This can present a risk if content is the sole determiner of the linguistic skills to be taught. Gaps in students' language development arise when students never encounter, and thus do not notice and master, certain low frequency language features. As students' proficiency grows, it is desirable to make stronger links to curricular content, while maintaining a focus on the language used to manage different meanings (Toohey & Derwing, 2008). For mainstreamed EAL students, subject matter is dictated by the disciplines they are learning, and the requisite language forms are those used to shape meanings to achieve these curricular ends.

Since 2005, a number of research-driven materials have been published for use by curriculum teachers with the objective of promoting the academic development of EAL students in secondary schools[18]. These subject-related, non-fiction texts aimed to provide a cognitively challenging yet linguistically controlled alternative to materials designed for EL1 children such as school journals (on the one hand) and impenetrable subject texts (on the other). Unfortunately, these materials

[18] Some of these include: *Applications*, *Bamboo and Flax, Making language and learning work 1 & 2, Focus on English*, *Selections* (Retrieved on 19 August, 2010 from http://esolonline.tki.org.nz/).

along with others produced by the Ministry of Education are often lost within schools and may fail to reach their target, in this case subject teachers (MacGibbon, et al., 2009). Alternatively, if they receive such texts, the subject teachers may ignore them or redirect them to Learning Support, ESOL, or the library. The reasons why are not clear, but the limited take-up of resources designed for use with mainstream teachers of EAL learners has been the subject of at least one Ministry study suggesting the need for an integrated approach to their promotion and distribution (Renwick, 2007).

The *English Language Learning Progressions*, or ELLP (Ministry of Education, 2008), was also designed for use by all teachers but has particular significance for ESOL teachers in secondary schools. The ELLP, along with the ESOL progress assessment guidelines (Ministry of Education, 2005), provides guidance on assessment procedures suitable for new learners of English, and a framework for tracking students' English language acquisition. The idea is that EAL students should not be assessed using EL1 tools in their first few years of learning in English but if teachers are aware of students' ELLP proficiency, they will be able to plan appropriate next learning steps for EAL students (Toohey & Derwing, 2008). ESOL teachers and curriculum teachers have been offered PD over several years to gain familiarity with ELLP and so they can ideally apply this understanding about how second language acquisition progresses to their teaching. This is a powerful document for tracking students' language development and not intended to be an ESOL curriculum. Furthermore, the ELLP is useful in illustrating a number of challenges related to constructing an ESOL curriculum.

1. It is not feasible to link ELLP closely to curriculum levels. New Zealand students are normally placed in classes with others close to the same age to accommodate their social needs so it is unlikely for a 16-year-old year 12 student to be placed with 13-year-old year 9 students. However, an EAL learner who is cognitively operating at level five on the curriculum may yet have English language proficiency at foundation level (or beginner level). This cognitive-linguistic mismatch is why EL1 children's materials are unsuited to adolescent EAL students. It

is equally possible for foundation level, refugee EAL students to be illiterate in their L1 having attended school irregularly or not at all (Toohey & Derwing, 2008). ELLP can help teachers identify the next learning steps of each of these students, but it is challenging to construct a curriculum that would meet the wider educational needs of both students, even if they are both at the same level of English language proficiency. The first student, literate in the L1, can be expected to make fast progress toward EL1 classmates, whereas the second student is likely to take longer without academic literacy in either language.

2. ELLP can be used to evaluate the learner's actual output (productive skills) but measures the level of challenge inherent in written and oral texts rather than directly evaluating students' receptive skills. It is possible to select or construct reading and listening materials to meet learners' receptive language proficiency and the Ministry resources discussed above are labelled according to ELLP levels. However, students' oral and written, productive and receptive skills may also develop at different rates and this requires differentiated and coherent scaffolding by their teachers. How might a curriculum accommodate this?

3. Despite the sound objective that ELLP should be used by all teachers, it has taken ESOL teachers several years to appropriate it and embed its use in their practice. ESOL teachers from all the schools represented in this study had attended workshops on implementing ELLP and one of the participants had attended with his ESOL head of department. Nevertheless, none of the participants was particularly interested in the data ELLP offered and several participants told me that they deliberately chose not to access these data. ELLP is a logical first step towards understanding the language demands affecting learners at different levels of language acquisition, yet curriculum teachers are not engaged in this process.

4. ELLP evaluates language skills but is otherwise content empty. Another resource, the *English Language Intensive Programme* or ELIP (Ministry of Education, 2003) was designed to model how a language focus might operate at different ELLP stages in the context of different

curriculum levels and subject areas. Unfortunately, curriculum teachers are not familiar with this resource and are thus unlikely to seriously consider applying it to their teaching. Even if teachers applied a language focus, the question remains of how to determine appropriate content for an ESOL curriculum?

The most feasible senior ESOL curriculum, given the challenges listed above, is therefore likely to resemble English for Academic Purposes (EAP) courses promoted in tertiary institutions, and would probably consist of integrated, thematic instruction presented using substantive structures favoured by particular subjects. ESOL staff would tease out the language demands required to realise these knowledge structures and make these explicit to the learners. This would require them to liaise closely with curriculum teachers to ensure that there was an authentic connection between the subject matter and language forms being taught. The ESOL teacher's job would be to ensure that students had acquired the requisite cognitive academic language proficiency to support more complex and increasingly subject-specific usage.

It is essential that clear links be made between subject knowledge structures and patterns of academic language if ESOL or EAP courses are to gain traction in schools. If such courses were mandated as a means for assessing students' literacy proficiency for university entrance, teachers and students alike might cease viewing ESOL as a variety of 'remedial English', and EAL students' academic language learning might gain legitimacy and credibility. The institution of level one literacy standards augurs well in this respect. More encouraging still is the consultation process underway in late 2010 for two English for academic purposes standards (formerly level 4 ESOL standards) to be used as one of four pathways for university entrance literacy.[19]

[19] Retrieved on 2 November, 2010 from http://www.nzqa.govt.nz/about-us/consultations-and-reviews/proposed-changes-to-the-university-entrance-ue-requirement/

It will be useful to monitor the performance of the new Australian Curriculum which is due for implementation in 2011 (Australian Curriculum Assessment and Reporting Authority, 2010). The draft curriculum is more prescriptive than that of the New Zealand Curriculum (Ministry of Education, 2007a). It is proposed that language development be systematically addressed from two directions: through the curriculum area of English, and through individual curriculum areas.

Firstly, the subject English is divided into language, literature and literacy strands, and the skills in each strand operate at every curriculum level incrementally developing from kindergarten to year 12. In the senior school, English divides into four optional courses which may be taken individually or in conjunction with one another. These are English, English as an additional language, literature, and essential English (or literacy). Each of these courses consists of four compulsory units of work: language texts and contexts, representation, making connections, and perspectives all of which involve the skills of reading, writing, speaking, listening and viewing. It is intended for these units to last one term and they require students to display increasing proficiency in producing and analysing language as well as synthesising new ideas. The English as an additional language course is expected to develop EAL students' metalinguistic awareness, prepare students for other academic language forms and ways of thinking, but especially to develop language skills using the context of curriculum English.

The second means of developing subject-specific language proficiency is through the subjects themselves. While the materials are in draft, it is not clear how this will be managed, although the draft chemistry curriculum requires students in the senior school to:

> Communicate ideas and findings, including:
>
> - using correct scientific language and conventions when describing methods, conclusions and explanations
> - selecting and using appropriate methods for representing a range of chemical structures
> - creating and presenting structured reports of multi-step experimental and investigative work

- sharing and exchanging information, including through ICT, in collaborative endeavours, and observing social protocols, ethical use of information and security of information
- communicating chemical ideas within and beyond the chemistry community, and selecting and using formats appropriate to a purpose and audience. (Australian Curriculum Assessment and Reporting Authority, 2010, p. 20)

Until implementation begins, it is not clear how Australian curriculum teachers will be expected to recognise and teach "correct scientific language" or "formats appropriate to a purpose and audience". It is unclear how small schools will staff the four English courses, and it is also unclear what PD or initial teacher education will support them in this endeavour. New Zealand educators will watch with interest to see how curriculum teachers manage their responsibility for teaching language. Nonetheless, topics and texts in the Australian curriculum document are prescribed to a far greater extent than in the New Zealand curriculum. Whereas, statements about teachers taking responsibility for the language of their subject are aspirational in New Zealand, they appear to be mandatory in Australia. Perhaps it has been the freedom to manage the teaching and learning process within the bounds of key competencies that has undermined the take-up of cross-curricular language development in New Zealand? Australia has been considering how best to manage language learning for many years more than New Zealand. In this respect it will be edifying to assess the progress of the new Australian curriculum both in terms of the EAL strand of English, and in the requirement for literacy focus across the curriculum.

Implications for collaboration amongst teachers

An alternative version of PD can occur where ESOL and subject teachers share their expertise by collaborating. As discussed earlier in this study, it is difficult to achieve partnerships where one teacher is perceived to have more mana (respect and status) than another. As intimated earlier, teachers respect the knowledge structures of their own community and struggle to see value where content pedagogy differs from that of their discipline. International attempts to encourage teachers to work together have identified this along with other barriers to successful collaboration such as secondary school structures (Moje, 2008; O'Brien & Stewart, 1995). They cite the lack of an ESOL

curriculum which might identify learning objectives to use in planning with subject teachers and a lack of scheduled planning or teaching time as reasons why teacher collaborations fail (Arkoudis, 2005; Creese, 2010). Teacher availability and similar staffing issues present an additional barrier for small schools setting up collaborative partnerships in New Zealand.

There is, however, one approach to teacher collaboration with potential for solving this problem that has not been fully investigated. One of the schools represented in this study was trialling an integrated curriculum in the junior school. This innovative alternative to compartmentalised disciplinary approaches may provide a model that can be adapted for ESOL/mainstream teacher cooperation having proven successful at primary level such as in Florida where teachers engaged in PD integrating English language, mathematics and science instruction (Lee et al., 2008). Expecting teachers of mainstream subjects to work together to negotiate a shared curriculum may break down the usual barriers to co-planning and teaching cross-curricular units of work. The perennial secondary school problem of disciplinary resistance, including tension between hard and soft approaches, may challenge collaboration. On the other hand, developing a school culture of teachers working together may open the door to including a truly collaborative focus on language (Gladman, 2009). Research investigating effective teacher collaboration in schools with integrated curricula is an exciting area for future research.

Implications for collaboration between teachers and outside experts

External expertise has been identified as a "necessary, but not sufficient" feature of PD impacting on student outcomes (Timperley, et al., 2007, p. xxvii). Many studies illustrate the role that an outside provider can play in initiating or helping to embed change to teacher practice. Collaborations may operate in a two-way partnership between academics and a particular school or set of schools (Aguirre-Munoz, Park, Amabisca, & Boscardin, 2008; Hammond & Gibbons, 2005; McDonald, et al., 2008; Short & Fitzsimmons, 2007; Walqui & van Lier, 2010); or in a three-way

partnership across government departments, tertiary providers and schools (McNaughton & Lai, 2009). In these cases, the perceived expertise of an outside facilitator may attract the interest of curriculum teachers as well as performing the function of helping the school leader to gain sufficient knowledge about language so he or she can be positioned as an expert in his/her own right.

An outsider can play other important roles during this first phase of PD by initiating close scrutiny of data on students' language. My study suggests that curriculum teachers are not otherwise likely to seek this information or understand how to interpret it if they are offered it. Only two of the participants in my study saw value in seeking language data about their EAL learners, whereas three of the participants offered the opinion that such data were meaningless to them. An outside agent may therefore be useful in working with teachers both to select and interpret initial data and in challenging teachers to relate data to curriculum learning by using collective enquiry (McNaughton & Lai, 2009). In some studies, the outside expert's role diminishes as the school team takes over the PD (May, 2007). In others, where there is a flat organisational structure to the PD, a collaborative approach between outside agency and teaching staff is maintained for the duration of the intervention (McDonald, et al., 2008). Other practices trialled by the SSLI initiative are also likely to be applicable to implementing a focus on academic language; however, using an outside expert as a catalyst or partner for the change process appears to have strong potential in affecting change in teacher beliefs and practices provided the final PD can be sustained by school systems as well as school staff (Timperley, et al., 2007).

Conclusion

This study asked how curriculum teachers of year 12 classes perceive and manage to combine the skills of teaching their curriculum content and the language skills necessary for effective learning for students learning English as an additional language (EAL students) in their classes. In order to investigate this, I considered how teachers described what they did to support EAL students'

learning within their curriculum area and then observed what teachers actually did to support EAL students' learning. Drawing upon research in educational linguistics, I pointed out that EAL students need accelerated instruction to catch up with their English speaking classmates who themselves make steady gains in academic knowledge each year (Cummins, 2000a; Short & Fitzsimmons, 2007). Research indicates that EAL students need integrated content and language instruction delivered by appropriately qualified ESOL and subject teachers (de Jong & Harper, 2005; Echevarria et al., 2008; Walqui & van Lier, 2010). At present, curriculum teachers appear unable to see how pivotal academic language is to all learning. They underestimate how particular texts may challenge EAL learners, and fail to methodically build on students' linguistic skills. Instead, their approaches to teaching are primarily informed by disciplinary practices which tend to be more or less conducive to promoting language acquisition depending on whether the subject matter is hard or soft (Biglan, 1973a; Lindblom-Ylanne et al., 2006). Teachers' disciplinary beliefs appear to be deeply entrenched and may be resistant to change (Becher & Trowler, 2001). Thus, it seems crucial to consider how initial teacher education and professional development might be adapted to include a sustainable focus on language development.

The issue of how to engage and educate teachers in delivering explicit language instruction concurrently with disciplinary content is extremely complex. Collaboration between teachers, while desirable, may not be feasible while ESOL teachers do not enjoy the same status as their curriculum colleagues, and while there is no ESOL curriculum to signal their disciplinary knowledge. Constructing an ESOL curriculum is challenging because academic language must include disciplinary-specific features and while ESOL involves acquiring proficiency in a range of academic contexts, it has no intrinsic subject content. Furthermore, sharing language skills across teachers is not assured even in countries where an ESOL curriculum has been adopted (Arkoudis, 2006; Harper & de Jong, 2009). This would suggest that the most feasible options may be a systematic programme of teacher PD (Renwick, 2007) with facilitation by curriculum teachers

with TESSOL qualifications as well as ESOL specialists implemented alongside required pre-service teacher education relating to teaching language across the curriculum.

This study has raised issues which merit further research on effective approaches to enable learners of English as an additional language to succeed academically in secondary schools. It has justified the importance of all teachers taking responsibility for teaching the language of their discipline by foregrounding the language forms used to create meaning. In doing so, ethical challenges arose that are inherent when a researcher closely examines the practice of experienced and competent teachers. This research did not set out to reveal limitations in these teachers' practice, but having noted gaps between what is considered 'good' practice in educational linguistics and that in curriculum areas, it would have been untrustworthy to ignore them. In this study, the identities of participants were protected by discussing teachers' beliefs and practices as composite cases according to hard and soft characteristics. Nonetheless, it is apparent that the notion of an 'expert' practitioner depends upon the criteria applied, and these are likely to be subject-specific. In the context of this study, these criteria relate specifically to practices enhancing language acquisition in the content classroom and not to teacher behaviours that may be valued within an individual discipline. These considerations mean that as a qualitative researcher, investigating teacher practices from a particular epistemological stance, sensitivity was required on the reporting and analysis of any findings that could appear critical of the participants' practice. While acknowledging the limitations of drawing conclusions from a qualitative case study, the research findings do signal areas meriting future investigation.

Firstly, it is apparent that teachers' content pedagogical knowledge varies across disciplines (Shulman, 2000). It would be useful to investigate cases where subject teachers successfully balance content and language teaching to see whether hard-soft pedagogical characteristics

persist. For example: are there pedagogies from hard disciplines that can successfully be applied to language teaching? While this study supports others in emphasising the value of interaction for learning (Gibbons, 1998, 2003; Swain, 1996, 2006; Toohey, 1998; Walqui, 2000b), there may be alternative ways of learning language in subject areas where independent learning is prioritised.

Secondly, although one of the most significant findings of this study is the way that characteristics of teachers' pedagogical content knowledge cluster along a ***hard*** to ***soft*** continuum, these can be perceived as holding negative connotations about the relative intellectual challenge of subjects. This research is foregrounding a more contemporary approach, and one less polarising with the introduction of new terms for these concepts: ***sequential*** and ***negotiated approaches to teaching.*** These proposed concepts will enable more nuanced discussion and future studies into these phenomena.

Thirdly, at the level of policy, there are few international evaluations of ESOL curricula. Therefore there is an urgent need to monitor implementation of ESOL courses and curricula (such as that proposed in Australia) to establish whether these findings can be applied in New Zealand.

Finally, it would also be timely to foreground the issue of literacy instruction and assessment in secondary schools when this is a prerequisite for entry into higher education. Wide stakeholder input should be sought to allow this complex issue to be discussed in depth towards providing guidance to schools on how to implement a dual curriculum.

Foremost amongst the areas worthy of further investigation, the original research problem persists: How can curriculum teachers learn to work effectively across two, sometimes conflicting, disciplines?

References

Aguirre-Munoz, Z., Park, J.-E., Amabisca, A., & Boscardin, C. K. (2008). Developing teacher capacity for serving ELLs' writing instructional needs: A case for systemic functional linguistics. *Bilingual Research Journal, 31*(1), 295-322.

Alton-Lee, A. (2003). *Quality teaching for diverse students in schooling: Best evidence synthesis*. Wellington: Ministry of Education.

Anderson, R. C., Rand, J. S., & Anderson, M. C. (1978). Schemata as scaffolding for the representation of information in connected discourse. *American Educational Research Journal, 15*(3), 433-440.

Andrews, R., Beverton, S., Locke, T., Low, G., Robinson, A., Torgerson, C., et al. (2004). *The effect of grammar teaching (syntax) in English on 5 to 16 year olds' accuracy and quality in written composition*. York: Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) support.

Anthony, G., & Walshaw, M. (2007). *Effective pedagogy in mathematics/pangarau*. Wellington: Ministry of Education.

Arkoudis, S. (2003). Teaching English as a second language in science classes: Incommensurate epistemologies? *Language and Education, 17*(3), 161-173.

Arkoudis, S. (2005). Fusing pedagogic horizons: Language and content teaching in the mainstream. *Linguistics and Education, 16*, 173-187.

Arkoudis, S. (2006). Negotiating the rough ground between ESL and mainstream teachers. [Article]. *International Journal of Bilingual Education & Bilingualism, 9*(4), 415-433.

Aukerman, M. (2006). Who's afraid of the big "bad answer"? *Educational Leadership, 64*(2), 37-41.

Australian Curriculum Assessment and Reporting Authority. (2010). Australian Curriculum Consultation Portal. Retrieved August 11, 2010, from http://www.australiancurriculum.edu.au/Home

Barkhuizen, G., Knoch, U., & Starks, D. (2006). Language practices, preferences and policies: Contrasting views of Pakeha, Maori and Asian students. *Journal of Multicultural and Multilingual Development, 27*(5), 375-391.

Bazeley, P. (2007). *Qualitative data analysis with NVivo*. London: Sage.

Becher, T., & Trowler, P. R. (2001). *Academic tribes and territories: Intellectual enquiry and the culture of disciplines* (2nd ed.). Maidenhead, Berkshire: The Society for Research into Higher Education & Open University Press.

Berg, B. L. (2009). *Qualitative research methods for the social sciences*. Boston: Allyn & Bacon.

Biglan, A. (1973a). The characteristics of subject matter in different subject areas. *Journal of Applied Psychology, 57*(3), 195-203.

Biglan, A. (1973b). Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology, 57*(3), 204-213.

Boulton-Lewis, G. M., Smith, D. J. H., McCrindle, A. R., Burnett, P. C., & Campbell, K. J. (2001). Secondary teachers' conceptions of teaching and learning. *Learning and Instruction, 11*, 35-51.

Bourne, J. (2007). Focus on literacy: ELT and educational attainment in England. In J. Cummins & C. Davison (Eds.), *The international handbook of English language teaching* (pp. 199-210). Norwell, USA: Springer-Verlag.

Brinton, D., & Jensen, L. (2003). Appropriating the adjunct model: English for academic purposes at the university level. In J. Crandall & D. Kaufman (Ed.), *Case studies in TESOL practice series*. Alexandria, VA: TESOL.

Brinton, D., Snow, M., & Wesche, M. (2003). *Content-based second language instruction*. Michigan: The University of Michigan Press.

Brown, P. A. (2008). A review of the literature on case study research. *Canadian Journal for New Scholars in Education, 1*(1), 1-13.

Buehl, M. M., & Alexander, P. A. (2006). Examining the dual nature of epistemological beliefs. *International Journal of Educational Research, 45*(1-2), 28-42.

Bunch, G. C. (2009). "Going up there": Challenges and opportunities for language minority students during a mainstream classroom speech event. *Linguistics and Education, 20*(2), 81-108.

Bunch, G. C., Shaw, J. M., & Geaney, E. R. (2010). Documenting the language demands of mainstream content-area assessment for English learners: Participant structures, communicative modes and genre in science performance assessments. *Language and Education*, *24*(3), 185-214.

Cancino, H., Rosansky, E. J., & Schumann, J. H. (1975). The acquisition of the English auxiliary by native English speakers. *TESOL Quarterly, 9*(4), 421- 430.

Carrasquillo, A., Kucer, S. B., & Abrams, R. (2004). *Beyond the beginnings: Literacy interventions for upper elementary English language learners*. Clevedon: Multilingual Matters.

Chamot, A. U., & O'Malley, J. M. (1987). The Cognitive Academic Language Learning Approach: A Bridge to the Mainstream. *TESOL Quarterly, 21*, 227-249.

Chamot, A., & O'Malley, M. (1994). *The CALLA handbook*. Reading, MA: Addison Wesley.

Chamot, A. U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics, 25*, 112-133.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London: SAGE.

Chomsky, N. (1986). *Knowledge of language: Its nature, origin and use*. Westport, CT: Praeger.

Christie, F. (1997). Curriulum macrogenres as forms of initiation into a culture. In F. Christie & J. R. Martin (Eds.), *Genre and institutions: Social processes in the workplace and school* (pp. 134-160). London: Cassell.

Coffin, C. (1996). *School literacy practices: A critical orientation to text*. Paper presented at the Educational research: Building new partnerships. ERA and AARE Conference. Retrieved June 16, 2010, from http://www.aare.edu.au/96pap/coffc96326.txt

Coffin, C. (2006a). Learning the language of school history: The role of linguistics in mapping the writing demands of the secondary school curriculum. *Journal of Curriculum Studies, 38*(4), 413-429.

Coffin, C. (2006b). Reconstructing 'personal time' as 'collective time': Learning the discourse of history. In R. Whittaker, M. O'Donnell & A. McCabe (Eds.), *Language and literacy: Functional approaches* (pp. 207-232). London: Continuum.

Collier, V. P. (1987). Age and rate of acquisition of second language for academic purposes. *TESOL Quarterly, 21*(4), 617-641.

Collier, V. P. (1989). How long? A synthesis of research on academic achievement in a second language. *TESOL Quarterly, 23*(3), 509-531.

Coonan, C. M. (2007). Insider views of CLIL class through teacher self-observation: Introspection. *The International Journal of Bilingual Education and Bilingualism, 10*(5), 625-646.

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research 3e: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.

Coxhead, A. (2000). A new academic word list. *TESOL Quarterly, 34*(2), 213-238.

Coyle, D. (2007). Content and language integrated learning: Towards a connected research agenda for CLIL pedagogies. *The International Journal of Bilingual Education and Bilingualism, 10*(5), 543-562.

Creese, A. (2002). The discursive construction of power in teacher partnerships: Language and subject specialists in mainstream schools. *TESOL Quarterly, 36*(4), 597-616.

Creese, A. (2005). Is this content-based language teaching? *Linguistics and Education, 16*, 188-204.

Creese, A. (2006). Supporting talk? Partnership teachers in classroom interaction. [Article]. *International Journal of Bilingual Education & Bilingualism, 9*, 434-453.

Creese, A. (2010). Content-focused classrooms and learning English: How teachers collaborate. *Theory into practice, 49*(2), 99 - 105.

Creswell, J. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (2nd ed.). New Jersey: Pearson, Merrill Prentice Hall.

Creswell, J. (2009). *Research design: Qualitative, quantitative and mixed methods approaches* (3rd ed.). Los Angeles: SAGE.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into Practice, 39*(2), 124-130.

Cummins, J. (1979). *Cognitive/academic language proficiency, linguistic interdependence, the optimum age question and some other matters. Working Papers on Bilingualism, No. 19*. Toronto: Bilingual Education Project, The Ontario Institute for Studies in Education.

Cummins, J. (1980). Bilingualism and the ESL student. *TESL Talk, 11*(1), 8-13.

Cummins, J. (1982). *Tests, achievement, and bilingual students*. Rosslyn, VA: National Clearinghouse for Bilingual Education.

Cummins, J. (1992). Bilingualism and second language learning. *Annual Review of Applied Linguistics, 13*, 51-70.

Cummins, J. (1999). BICS and CALP: Clarifying the distinction. *Opinion Papers, 1-9.*

Cummins, J. (2000a). Academic language learning, transformative pedagogy, and information technology: Towards a critical balance. *TESOL Quarterly, 34*(3), 537-548.

Cummins, J. (2000b). *Language, power and pedagogy* (Vol. 23). Clevedon, England: Multilingual Matters.

Cummins, J., Bismilla, V., Cohen, S., Giampapa, F., & Leoni, L. (2005). Timelines and lifelines: Rethinking literacy instruction in multilingual classrooms. *Orbit, 36*(1), 22- 26.

Cummins, J., Bismilla, V., Chow, P., Cohen, S., Giampapa, F., Leoni, L., et al. (2005). Affirming identity in multilingual classrooms. *Educational Leadership, 63*(1), 38-43.

Dalton-Puffer, C. (n.d.). Content and language integrated learning in Austrian classrooms: Applied linguistics takes a look. *Views*, 4-26. Retrieved from http://www.univie.ac.at/Anglistik/views/02_1&2/CDP.PDF

Darling-Hammond, L., Bransford, J., & LePage, P. (2005). Introduction. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world* (pp. 1-39). San Francisco: John Wiley.

Davison, C. (1990). The role of language in the post-primary classroom (including the implications for non-English speaking background students). In Ministry of Education (Ed.), *The Language across the Curriculum Project in Victoria* (pp. 16-26). Victoria, Australia: Ministry of Education.

Davison, C. (2001a). Current policies, programs and practices in school ESL. In B. Mohan, C. Leung & C. Davison (Eds.), *English as a second language in the mainstream* (pp. 31-50). Harlow, Essex: Pearson Education.

Davison, C. (2001b). Integrating language and content: Unresolved issues. In B. Mohan, C. Leung & C. Davison (Eds.), *English as a second language in the mainstream: Teaching, learning and identity* (pp. 51--70). Harlow, Essex: Pearson Education.

Davison, C. (2006). Collaboration between ESL and content teachers: How do we know when we are doing it right? *International Journal of Bilingual Education & Bilingualism, 9*, 454-475.

de Jong, E. J., & Harper, C., A. (2005). Preparing mainstream teachers for English-language learners: Is being a good teacher good enough? *Teacher Education Quarterly, 32*(2), 101.

Denscombe, M. (2007). *The good research guide for small scale social research projects* (3rd ed.). Maidenhead, Berkshire: Open University Press

Denzin, N. K., & Lincoln Y.S. (Ed.). (1998). *Collecting and interpreting qualitative Materials* (3rd ed.). Thousand Oaks: Sage.

Derewianka, B. (1990). *Exploring how texts work*. Newtown, NSW: Primary English Teaching Association (PETA).

Devitt, A. (2004). *Writing genres*. Carbondale, Illinois: Southern Illinois University Press.

Diaz, C. P., & Requejo, M. D. P. (2008). Teacher beliefs in a CLIL education project. *Porta Linguarum,* (10), 151-161.

Doerr, N. M. (2009). Laughing at mistakes: Language politics, counter-hegemonic actions, and bilingual education in Aotearoa/New Zealand. *Journal of Language, Identity & Education, 8*(2), 124-143.

Dooley, K. (2004). Pedagogy in diverse secondary school classes: Legacies for higher education. *Higher Education, 48*, 231-252.

Dong, Y. R. (2006). Learning to think in English. *Educational Leadership, 64*(2), 22-26.

Donnelly, J. (2006). The intellectual positioning of science in the curriculum, and its relationship to reform. *Journal of Curriculum Studies, 38*(6), 623-640.

Douglas Brown, H. (1991). TESOL at twenty-five: What are the issues? *TESOL Quarterly, 25*(2), 245-260

Dulay, H., & Burt, M. (1973). Should we teach children syntax? *Language Learning, 23*, 245-258.

Dulay, H., & Burt, M. (1974). Errors and strategies in child second language acquisition. *TESOL Quarterly, 8*(2), 129-136.

Dulay, H., Burt, M., & Krashen, S. (1982). Language two. New York: Oxford University Press.

Echevarria, J., & Short, D. (2007). *Programs and practices for effective sheltered instruction*. San Diego: California Department of Education.

Echevarria, J., Vogt, M., & Short, D. (2008). *Making content comprehensible for English learners: The SIOP model*. Boston: Pearson Education.

Education Workforce Advisory Group. (2010, April). *A vision for the teaching profession: Report to the Minister of Education*: New Zealand Government.

Eisenhardt, K. M. (2002). Building theories from case study research. In A. M. Huberman, & Miles, M. B. (Ed.), *The qualitative researcher's companion* (pp. 5-35). Thousand Oaks: Sage.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal, 50*(1), 25- 32.

Ellis, R. (1989). Are classroom and naturalistic acquisition the same? A study of the classroom acquisition of German word order rules. *Studies in Second Language Acquisition, 11*, 305-328.

Ellis, R. (2006). Current issues in the teaching of grammar: An SLA perspective. *TESOL Quarterly, 40*(1), 83-107.

Ellis, R., & He, X. (1999). The roles of modified input and output in the incidental acquisition of word meanings. *Studies in Second Language Acquisition, 21*(2), 285-301.

Faltis, C. (1984). A commentary on Krashen's input hypothesis. *TESOL Quarterly, 18*(2), 352- 357.

Fang, Z. (2005). Scientific literacy: A systemic functional linguistics perspective. *Science Education, 89*, 335-347.

Fang, Z., & Schleppegrell, M. J. (2010). Disciplinary literacies across content areas: Supporting secondary reading through functional language analysis. *Journal of Adolescent & Adult Literacy, 53*(7), 587-597.

Feryok, A., & Barkhuizen, G. (2008). TESSOL training and secondary content teachers: Incommensurable or in communication? *The TESOLANZ Journal, 16*, 44-53.

Flick, U. (2007). *Managing quality in qualitative research*. Los Angeles: SAGE.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12*(2), 219-245.

Ford, E. (1991). Criteria for developing an observation scheme for co-operative language learning. *Canadian Modern Language Review, 48*(1), 45-63.

Franken, M., & McComish, J. (2003). *Improving English language outcomes for students receiving ESOL services in New Zealand schools, with a particular focus on new immigrants: Report to the Ministry of Education*. Wellington: Ministry of Education, New Zealand.

Franson, C. (1999). Mainstreaming learners of English as an additional language: The class teacher's perspective. *Language, Culture and Curriculum, 12*(1), 59-71.

Genesee, F. (1994). *Integrating language and content: Lessons from immersion* (No. Educational Practice Reports). Washington, D.C.: Center for Applied Linguistics.

Genzuk, M. (n.d.). Specially designed academic instruction in English (SDAIE) for language minority students. Retrieved from http://www.google.co.nz/search?hl=en&rls=com.microsoft%3A*&q=Michael+Genzuk+SDAIE&btnG=Search&aq=f&aqi=&aql=&oq=&gs_rfai=

Gibbons, P. (1998). Classroom talk and the learning of new registers in a second language. *Language and Education, 12*(2), 99-118.

Gibbons, P. (2002). *Scaffolding language, scaffolding learning: Teaching second language learners in the mainstream classroom*. Portsmouth, NH: Heinemann.

Gibbons, P. (2003). Mediating language learning: Teacher interactions with ESL students in a content-based classroom. *TESOL Quarterly, 37*(2), 247-273.

Gibbons, P. (2008). "It was good and I learnt a lot": Intellectual practices and ESL learners in the middle years. *Australian Journal of Language and Literacy, 31*(2), 155-173.

Gibbons, P. (2009). *English learners, academic literacy, and thinking: Learning in the challenge zone*. Portsmouth, NH: Heinemann.

Gillham, B. (2000). *Case study research methods*. London: Continuum.

Gleeson, M. (2010). *Content AND language teaching? How do New Zealand teachers support students learning English as an additional language?* Unpublished article.

Gladman, A. (2009). *Collaborative interdisciplinary team teaching in Japan: A study of practitioner and student perspectives.* Macquarie University, Melbourne.

Goldenberg, C., & Coleman, R. (2010). *Promoting academic achievement among English language learners: A guide to the research*. Thousand Oaks, CA: Corwin.

Gray, S. (2006). *Language focused content teaching: A study of teacher development through action research.* Auckland: University of Auckland.

Gray, S. (2009). From principles to practice: Teachers' uptake of principles from instructed language learning to plan a focus on language form in content lessons. *System, 37*(4), 570-584.

Grossman, P. L. (1990). A tale of two Hamlets. In P. L. Grossman (Ed.), *The making of a teacher: Teacher knowledge and teacher education* (pp. 1-10). New York: Teachers College Press.

Grossman, P. L., Schoenfeld, A., & Lee, C. (2005). Teaching subject matter. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 201-231). San Francisco: John Wiley.

Grossman, P. L., & Stodolsky, S. S. (1995). Content as context: The role of school subjects in secondary school teaching. *Educational researcher, 24*(8), 5-11, 23.

Grossman, P. L., Stodolsky, S. S., & Knapp, M. S. (2004). *Making subject matter part of the equation: The intersection of policy and content*. Washington: University of Washington.

Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic enquiries. *Educational Technology Research and Development, 29*(2), 75- 91.

Hallam, S., & Ireson, J. (2008). Subject domain differences in secondary school teachers' attitudes towards grouping pupils by ability. *Zbornik Instituta za Pedagoska Istrazivanja, 40*(2), 369-387.

Halliday, M. A. K. (1993a). Language and the order of nature. In M. A. K. Halliday & J. R. Martin (Eds.), *Writing science: Literacy and discursive power* (pp. 106-123). London: The Falmer Press.

Halliday, M. A. K. (1993b). Some grammatical problems in scientific English. In M. A. K. Halliday & J. R. Martin (Eds.), *Writing science: Literacy and discursive power* (pp. 69-85). London: The Falmer Press.

Halliday, M. A. K. (2007). Some thoughts on language in the middle school years (1977). In J. J. Webster (Ed.), *Language and education* (Vol. 9, pp. 49-62). London: Continuum.

Halliday, M. A. K., & Hasan, R. (1985). *Language, context, and text: Aspects of language in a social-semiotic perspective*. Waurn Ponds, Victoria: Deakin University.

Hammond, J. (2006). High challenge, high support: Integrating language and content instruction for diverse learners in an English literature classroom. *Journal of English for Academic Purposes, 5*(4), 269-283.

Hammond, J. (2008). Intellectual challenge and ESL students: Implications of quality teaching initiatives. *Australian Journal of Language and Literacy, 31*(2), 128(127).

Hammond, J., & Gibbons, P. (2001). What is scaffolding? In J. Hammond (Ed.), *Scaffolding: teaching and learning in language and literacy education* (pp. 1-14). Sydney: PETA.

Hammond, J., & Gibbons, P. (2005). Putting scaffolding to work: The contribution of scaffolding in articulating ESL education. *Prospect, 20*(1), 6-30.

Han, Z., & Odin, T. (Eds.). (2006). *Studies of fossilisation in second language acquisition*. Clevedon, UK: Multilingual Matters.

Haneda, M. (1999). Modes of Student Participation in an Elementary School Science Classroom: From Talking to Writing. *Linguistics and Education, 10*(4), 459-485.

Haneda, M. (2006). Classrooms as communities of practice: A reevaluation. *TESOL Quarterly, 40*(4), 807-817.

Haneda, M. (2008). Contexts for learning: English language learners in a US middle school. *International Journal of Bilingual Education and Bilingualism, 11*(1), 57-74.

Haneda, M. (2009). Learning about the past and preparing for the future: A longitudinal investigation of a grade 7 sheltered social studies class. *Language and Education, 23*(4), 335-352.

Harklau, L. (2003). Generation 1.5 students and college writing. *Centre for Applied Linguistics, October, 2003*. Retrieved from http://www.cal.org/resources/digest/0305harklau.html

Harper, C., & de Jong, E. (2004). Misconceptions about teaching English-language learners. *Journal of Adolescent and Adult Literacy, 48*(2), 152-163.

Harper, C. A., & de Jong, E. J. (2009). English language teacher expertise: The elephant in the room. *Language and Education, 23*(2), 137-151.

Harper, C. A., de Jong, E. J., & Platt, E. J. (2008). Marginalizing English as a second language teacher expertise: The exclusionary consequence of No Child Left behind. *Language Policy, 7*(3), 267-284.

Hatch, E. (1978a). Acquisition of syntax in a second language. In J. Richards (Ed.), *Understanding second and foreign language learning: Issues and approaches* (pp. 34-69). Rowley, MA: Newbury House.

Hatch, E. (1978b). Discourse analysis and second language acquisition. In E. Hatch (Ed.), *Second language acquisition: A book of readings* (pp. 401-435). Rowley, Massachusetts: Newbury House.

Hattie, J. (2009). *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement*. Oxon: Routledge.

Haworth, P. (2008). Crossing borders to teach English language learners. *Teachers and Teaching: Theory and Practice, 14*(5), 411-430.

He, Y., Prater, K., & Steed, T. (2009). Moving beyond "just good teaching": ESL professional development for all teachers. *Professional Development in Education, iFirst Article*, 1-12.

Hofer, B. K. (2006). Domain specificity of personal epistemology: Resolved questions, persistent issues, new models. *International Journal of Educational Research, 45*(1-2), 85-95.

Honigsfeld, A., & Cohan, A. (2008). The power of two: Lesson study and SIOP help teachers instruct ELLs. *Journal of Staff Development, 29*(1), 24-26.

Hood, J. C. (2007). Orthodoxy vs. power: The defining traits of grounded theory. In A. Bryant & K. Charmaz (Eds.), *The SAGE handbook of grounded theory* (pp. 151- 164). Los Angeles: SAGE.

Huang, J. (2004). Socialising ESL students into the discourse of school science through academic writing. *Language and Education, 18*(2), 97-123.

Huebner, T. (1983). Linguistic systems and linguistic change in interlanguage. *Studies in Second Language Acquisition, 6*, 33- 53.

Ivey, G., & Fisher, D. (2006). When thinking skills trump reading skills. *Educational Leadership, 64*(2), 16-21.

Izumi, S., Bigelow, M., Fujiwara, M., & Fearnow, S. (1999). Testing the output hypothesis: Effects of output on noticing and second language acquisition. *Studies in Second Language Acquisition, 21*(3), 421-452.

Janzen, J. (2008). Teaching English language learners in the content areas. *Review of Educational Research, 78*(4), 1010-1038.

Jappinen, A.-K. (2005). Thinking and content learning of mathematics and science as cognitional development in content and integrated learning (CLIL): Teaching through a foreign language in Finland. *Language and Education, 19*(2), 148-169.

Johansson, R. (2003). *Case study methodology*. Paper presented at the Methodologies in Housing Research.

Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Researcher, 38*(5), 365-378.

Jones, A. (2009). Redisciplining generic attributes: The disciplinary context in focus. *Studies in Higher Education, 34*(1), 85-100.

Jones, A., & Baker, R. (2005). Curriculum, learning and effective pedagogy in science education for New Zealand: Introduction to special issue. *International Journal of Science Education, 27*(2), 131-143.

Kane, R. G. (2005). *Initial teacher education policy and practice*. Wellington: New Zealand Teachers Council and Ministry of Education.

Kelle, U. (1997). Theory building in qualitative research and computer programs for the management of textual data. *Sociological Research Online, 2*(2). Retrieved from http://www.socresonline.org.uk/socresonline/2/2/1.html>

Kember, D. (2001). Beliefs about knowledge and the process of teaching and learning as a factor in adjusting to study in higher education. *Studies in Higher Education*, *26*(2), 205- 221.

Kember, D. (2009). Promoting student-centred forms of learning across an entire university *Higher Education*, *58*, 1-13. DOI 10.1007/s10734-008-9177-6

Khan, S., & VanWynsberghe, R. (2008). Cultivating the under-mined: Cross-case analysis as knowledge mobilization. *Forum Qualitative Sozialforschung, 9*(1), 1-21 Article 34.

Klippel, F. (2008). New prospects or imminent danger? The impact of English medium instruction on education in Germany. In D. E. Murray (Ed.), *Planning change, Changing plans: Innovations in second language teaching* (pp. 26-42). Ann Arbor: The University of Michigan Press.

Knapp, P., & Watkins, M. (2005). *Genre, text, grammar: Technologies for teaching and assessing writing*. Sydney: UNSW.

Krashen, S. D. (1976). Formal and informal linguistic environments in language acquisition and language learning. *TESOL Quarterly, 10*(2), 157- 168.

Krashen, S. D. (1978). The monitor model for second-language acquisition. In Second language acquisition and foreign language teaching, Rosario C. Gingras (Ed.), 1-26. Arlington, Virginia: Center for Applied Linguistics.

Krashen, S. (1981a). Effective second language acquisition. *Staff Development Resources*. Retrieved from http://www.uwec.edu/ESL/Minors/TESOL/FLG378%20Article%20Krashen%20Effective%20Second%20Language%20Acquis.pdf

Krashen, S. (1981b). *Second language acquisition and second language learning*. Available from http://www.sdkrashen.com/SL_Acquisition_and_Learning/index.html

Krashen, S. (1992). Formal grammar instruction: Another educator comments. *TESOL Quarterly, 26*(2), 409-411.

Krashen, S., Long, M., & Scarcella, R. (1979). Age, rate, and eventual attainment in second language acquisition. *TESOL Quarterly, 13*(4), 573-583.

Kvale, S. (1983). The qualitative research interview: A phenomenological and hermeneutical mode of understanding. *Journal of Phenomenological Psychology 14*(2), 171-196.

Kvale, S. (1994). Ten standard objections to qualitative research interviews. *Journal of Phenomenological Psychology, 25*(2), 147-173.

Lapkin, S., & Swain, M. (1995). *Vocabulary teaching in a grade 8 French immersion classroom: A descriptive case study*. Toronto: Modern Language Centre, OISE.

Larsen-Freeman, D. (1976). An explanation for the morpheme acquisition order of second language learners. *Language Learning, 26*(1), 125-134.

Larsen-Freeman, D. (1991). Second language acquisition research: Staking out the territory. *TESOL Quarterly, 25*(2), 315-350.

Lasagabaster, D., & Sierra, J. M. (2009). Immersion and CLIL in English: More differences than similarities. *ELT Journal, 64*(4), 367-375.

Lauer, P. A. (2006). *An education research primer: How to understand, evaluate, and use it*. San Francisco: Jossey-Bass.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Lazaraton, A. (2005). Quantitative research methods. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 209- 224). Mahwah, NJ: Lawrence Erlbaum.

Lee, O., Adamson, K., Maerten-Rivera, J., Lewis, S., Thornton, C., & Leroy, K. (2008). Teachers' perspectives on a professional development intervention to improve science instruction among English language learners. *Journal of Science Teacher Education, 19*(1), 41-67.

Leont'ev, A. N. (1981). The problem of activity in psychology. In *The concept of activity in Soviet psychology* (pp. 37–71). Armonk, New York: Sharpe.

Leung, C. (2001). Evaluation of content-language learning in the mainstream classroom. In B. Mohan, C. Leung & C. Davison (Eds.), *English as a second language in the mainstream: Teaching, learning and identity* (pp. 177-198). Harlow, Essex: Pearson Education.

Leung, C. (2005). Language and content in bilingual education. *Linguistics and Education, 16*, 238-252.

Lightbown, P. M. (2003). SLA research in the classroom/SLA research for the classroom. *Language Learning Journal, 28*(Winter), 4-13.

Lightbown, P. M., Halter, R. H., White, J. L., & Horst, M. (2002). Comprehension-based learning: The limits of 'Do it yourself'. *The Canadian Modern Language Review, 58*(3), 427-465.

Lightbown, P. M., & Pienemann, M. (1993). Comments on Stephen D. Krashen's "teaching issues: Formal grammar instruction". Two readers react. *TESOL Quarterly, 27*(4), 717-722.

Limón, M. (2006). The domain generality-specificity of epistemological beliefs: A theoretical problem, a methodological problem or both? *International Journal of Educational Research, 45*(1-2), 7-27

Lindblom-Ylanne, S., Trigwell, K., Nevgi, A., & Ashwin, P. (2006). How approaches to teaching are affected by discipline and teaching context. *Studies in Higher Education, 31*(3), 285-298.

LoBianco (1990). Making language policy: Australia's experience. In R. B. J. Baldauf & A. Luke (Eds.), *Language planning and education in Australasia and the South Pacific* (pp. 1-22). Philadelphia: Multilingual Matters.

Long, M. (1981). Input, interaction, and second language acquisition. *Annals of the New York Academy of sciences: Native language and foreign language acquisition, 379*, 259-278.

Love, K. (2009). Literacy pedagogical content knowledge in secondary teacher education: Reflecting on oral language and learning across disciplines. *Language and Education, 23*(6), 541-560.

MacGibbon, L., Gilmore, F., Gilmore, A., Parkhill, F., Fletcher, J., & Johnson, J. (2009). *An evaluation of the use of School Journal and Ready to Read series to support effective literacy practice*: Assessment & Evaluation Research Hub, University of Canterbury. Unpublished document for the Ministry of Education, Wellington.

Macken-Horarik, M. (1996). Literacy and learning across the curriculum: Towards a model of register for secondary school teachers. In R. Hasan & G. Williams (Eds.), *Literacy in Society* (pp. 232-278). London: Longman.

Maljers, A., Marsh, D., Coyle, D., Hartiala, A., Marsland, B., Perez-Vidal, C., et al. (n.d.). Content and language integrated learning (CLIL) compendium Retrieved 12 January, 2010, from http://www.clilcompendium.com/clilcompendium.htm

Marsh, D. (2006). *English as medium of instruction in the new global linguistic order: Global characteristics, local consequences*. Paper presented at the Making connections: Second Annual Conference for Middle East Teachers of Science, Mathematics and Computing (METSMaC).

Martin, J. R. (1993a). Life as a noun: Arresting the universe in science and humanities. In M. A. K. Halliday & J. R. Martin (Eds.), *Writing science: Literacy and discursive power* (pp. 221-267). London: The Falmer Press.

Martin, J. R. (1993b). Literacy in science: Learning to handle text as technology. In M. A. K. Halliday & J. R. Martin (Eds.), *Writing science: Literacy and discursive power* (pp. 166-202). London: The Falmer Press.

Masgoret, A. M., & Gardner, R. C. (2003). Attitudes, motivation, and second language learning: A meta-analysis of studies conducted by Gardner and associates. *Language Learning, 53*, 123-163.

Maxwell, J. A. (2005). *Qualitative research design* (2nd ed. Vol. 41). Thousand Oaks, CA: Sage.

May, S. (2002). Accommodating multiculturalism and biculturalism in Aotearoa New Zealand: Implications for language education. *Waikato Journal of Education, 8*, 5-26.

May, S. (2007). Sustaining effective literacy practices over time in secondary schools: School organisational and change issues. *Language & Education: An International Journal*, *21*(5), 387-405

May, S., Hill, R., & Tiakiwai, S. (2004). *Bilingual/immersion education: Indicators of good practice. Final report to the Ministry of Education*: Wilf Malcolm Institute, University of Waikato.

May, S., & Wright, N. (2007). Secondary literacy across the curriculum: Challenges and possibilities. *Language & Education: An International Journal, 21*(5), 370-376.

McDonald, T., & Thornley, C. (2009). Critical literacy for academic success in secondary school: Examining students' use of disciplinary knowledge. *Critical literacy: Theories and Practices, 3*(2), 56-68.

McDonald, T., Thornley, C., Fitzpatrick, R., Elia, A., McDonald, L., Pullar, K., et al. (2008). *Developing teacher-researcher partnerships to investigate best practices: Literacy learning and teaching in content areas of the secondary school*. Wellington: Crown.

McLellan, E., MacQueen, K., & Neidig, J. (2003). Beyond the qualitative interview: Data preparation and transcription. *Field Methods, 15*(1), 63-84.

McNaughton, S., & Lai, M. K. (2009). A model of school change for culturally and linguistically diverse students in New Zealand: A summary and evidence from systematic replication. *Teaching Education, 20*(1), 55-75.

Merriam, S. (1988). *Case study research in education: A qualitative approach*. San Francisco: Jossey-Bass.

Ministry of Education. (2003). *English language intensive programme: Years 7-13 resource*. Auckland: National Migrant and Refugee Education Team.

Ministry of Education (2004). *Effective literacy strategies in years 9 to 13*. Wellington: Learning Media.

Ministry of Education. (2005). *ESOL progress assessment guidelines*. Wellington: Learning Media.

Ministry of Education. (2007a). *The New Zealand curriculum*. Wellington: Learning Media.

Ministry of Education. (2007b). *Making language and learning work 1: Integrating language and learning in secondary maths and science*. Wellington: Learning Media.

Ministry of Education. (2008). *The English language learning progressions: Introduction*. Wellington: Learning Media.

Ministry of Education International Division. (2002). *A census of providers of ESOL programmes for international students: Overview report*. Wellington: Ministry of Education.

Mohan, B. (1979). Relating language teaching and content teaching. *TESOL Quarterly, 13*(2), 171-182.

Mohan, B. (2001). The second language as a medium of learning. In B. Mohan, C. Leung & C. Davison (Eds.), *English as a second language in the mainstream: Teaching, learning and identity* (pp. 107-126). Harlow, Essex: Pearson Education.

Mohan, B., & Slater, T. (2005). A functional perspective on the critical "theory/practice" relation in teaching language and science. *Linguistics and Education, 16*, 151-172.

Mohan, B., & Slater, T. (2006). Examining the theory/practice relation in a high school science register: A functional linguistic perspective. *Journal of English for Academic Purposes, 5*(4), 302-316.

Moje, E. B. (2008). Foregrounding the disciplines in secondary literacy teaching and learning: A call for change. *Journal of Adolescent & Adult Literacy, 52*(2), 96-107.

Morse, J. C., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods, 1*(2), 13-22.

Myers, M. D. (1997). Qualitative research in information systems. *MISQ Quarterly, 21*(2), 241-242. Retrieved from http://misq.org/discovery/MISQD_isworld/., www.qual.auckland.ac.nz

Nassaji, H., & Fotos, S. (2004). Current developments in research on the teaching of grammar. *Annual Review of Applied Linguistics, 24*, 126-146.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge, UK: Cambridge University Press.

Nelson Laird, T. F., Shoup, R., Kuh, G., & Schwarz, M. (2008). The effects of discipline on deep approaches to student learning and college outcomes. *Research in Higher Education, 49*, 469-494.

Neumann, R., Parry, S., & Becher, T. (2002). Teaching and learning in their disciplinary contexts: A conceptual analysis. *Studies in Higher Education, 27*(4), 405-417.

Neville-Barton, P., & Barton, B. (2005). *The relationship between English language and mathematics learning for non-native speakers*. Wellington: Teaching and Learning Research Initiative, NCER.

New Zealand Teachers Council/Te Pouherenga Kaiako o Aotearoa. (2007). Graduating teacher standards: Aotearoa. Retrieved July 8, 2010, from http://www.teacherscouncil.govt.nz/te/gts/index.stm

Noor, K. B. M. (2008). Case study: A strategic research methodology. *American Journal of Applied Sciences, 5*(11), 1602(1603).

O'Brien, D. G., & Stewart, R. A. (1995). Why content literacy is difficult to infuse into the secondary school: Complexities of curriculum. *Reading Research Quarterly, 30*(3), 442.

OECD. (2007). *Programme for international student assessment 2006: Science competencies for tomorrow's world. Executive summary*. Retrieved on August 18, 2010, from http://www.oecd.org/dataoecd/15/13/39725224.pdf

Ogle, D. M. (1986). K-W-L: A teaching model that develops active reading of expository text. *The Reading Teacher, 39*(6), 564-570.

Olafson, L., & Shraw, G. (2006). Teachers' beliefs and practices within and across domains. *International Journal of Educational Research, 45*, 71-84.

Oolbekkink-Marchand, H. W. (2006). *Teachers' perspectives on self-regulated learning: An exploratory study in secondary and tertiary education.* Unpublished PhD thesis, Leiden.

Oolbekkink-Marchand, H. W., van Diel, J. H., & Verloop, N. (2006). A breed apart? A comparison of secondary and university teachers' perspectives on self-regulated learning. *Teachers and Learning, 12*(5), 593-614.

Paltridge, B. (2000). *Making sense of discourse analysis*. Brisbane: Gold Coast.

Patton, M. Q. (2002). Two decades of developments in qualitative enquiry: A personal, experiential perspective. *Qualitative Social Work, 1*(3), 261-283.

Pica, T. (2005). Classroom learning, teaching, and research: A task-based perspective. *The Modern Language Journal, 89*(3), 339-352.

Pica, T., Young, R., & Doughty, C. (1987). The impact of interaction on comprehension. *TESOL Quarterly, 21*(4), 737-758.

Pienemann, M. (1989). Is language teachable? Pyscholinguistic experiments and hypotheses. *Applied Linguistics, 10*(1), 52-79.

Reeves, J. (2009). A sociocultural perspective on ESOL teachers' linguistic knowledge for teaching. *Linguistics and Education, 20*(2), 109-125.

Reeves, J. R. (2006). Secondary teacher attitudes toward including English-language learners in mainstream classrooms. *Journal of Educational Research, 99*(3), 131-142.

Renwick, R. (2007). *Synergies and strategies. Supporting schools to make links between effective practices for diverse groups: Maori, Pasifika and ESOL students*. Unpublished document for Ministry of Education, Wellington.

Rodrigo, V., Krashen, S., & Gribbons, B. (2004). The effectiveness of two comprehensible-input approaches to foreign language instruction at the intermediate level *System, 32*(1), 43-60.

Roessingh, H. (2008). Variability in ESL outcomes: The influence of age on arrival and length of residence on achievement in high school. *TESL Canada Journal, 26*(1), 87.

Roessingh, H., & Field, D. (2000). Time, timing, timetabling: critical elements of successful graduation of high school ESL learners. *TESL Canada Journal, 18*(1), 17.

Roessingh, H., & Kover, P. (2003). Variability of ESL learners' acquisition of cognitive academic language proficiency: What can we learn from achievement measures? *TESL Canada Journal, 21*(1), 1-21.

Roessingh, H., Kover, P., & Watt, D. (2005). Developing cognitive academic language proficiency: The journey. *TESL Canada Journal, 23*, 1-27.

Rolfe, G. (2006). Validity, trustworthiness and rigour: Quality and the idea of qualitative research. *Journal of Advanced Nursing, 53*(3), 304- 310.

Rolstad, K., Mahoney, K., & Glass, G. V. (2005). The big picture: A meta-analysis of program effectiveness on English language learners. *Educational Policy, 19*, 572-594.

Rose, E. (2006). *An introduction to the grounded theory method*. Unpublished Seminar, Victoria University.

Sachs, J. (2001) 'Teacher professional identity: competing discourses, competing outcomes', Journal of Education Policy, 16: 2, 149—161

Scarcella, R. (2003). *Academic English: A conceptual framework*. Irvine: Linguistic Minority Research Institute, University of California.

Schleppegrell, M. (2003). *Grammar for writing: Academic language and ELD standards*. Davis: University of California Linguistic Minority Research Institute (UCLMRI).

Schleppegrell, M. (2004). *The language of schooling: A functional linguistics perspective*. Mahawh, NJ: Lawrence Erlbaum.

Schleppegrell, M., Greer, S., & Taylor, S. (2008). Literacy in history: Language and meaning. *Australian Journal of Language and Literacy, 31*(2), 174-187.

Schommer, M., & Walker, K. (1995). Are epistemological beliefs similar across domains? *Journal of Educational Psychology, 87*(3), 424- 432.

Schumann, J. (1974). The implications of interlanguage, pidginisation and creolisation for the study of adult second language acquisition. *TESOL Quarterly, 8*(2), 145-152.

Schwandt, T. A. (2007). *The Sage dictionary of qualitative inquiry* (3rd ed.). Los Angeles: SAGE.

Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics in Language Teaching, 10*(1), 209-232.

Sharpe, T. (2008). How can teacher talk support learning? *Linguistics and Education, 19*(2), 132-148.

Short, D., & Fitzsimmons, S. (2007). *Double the work: Challenges and solutions to acquiring language and academic literacy for adolescent English language learners- A report to Carnegie Corporation of New York*. Washington DC: Alliance for Excellent Education.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4-14.

Shulman, L. S. (2000). Teacher development: Roles of domain expertise and pedagogical knowledge. *Journal of Applied Developmental Psychology, 21*(1), 129-135.

Siebert, D., & Draper, R. J. (2008). Why content-area literacy messages do not speak to mathematics teachers: A critical content analysis. *Literacy Research and Instruction, 47*(4), 229-245.

Siskin, L. (1991). Departments as different worlds: Subject subcultures in secondary schools. *Educational Administration Quarterly, 27*(2), 134-160.

Snow, M., Met, M., & Genesee, F. (1989). A conceptual framework for the integration of language and content in second/foreign language instruction. *TESOL Quarterly, 23*(2), 201-217.

Spada, N., & Lightbown, P. M. (2008). Form-focused instruction: Isolated or integrated? *TESOL Quarterly, 42*, 181-207.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*, 63-75.

Spolsky, B. (1972). *The Navajo Reading Study: An illustration of the scope and nature of educational linguistics*. Paper presented at the Third International Congress of Applied Linguistics. Retrieved 9 October, 2010, from http://eric.ed.gov/PDFS/ED077267.pdf

Stake, R. E. (2006). *Multiple case study analysis*. New York: The Guilford Press.

Stodolsky, S., & Grossman, P. (1995a). The impact of subject matter on curricular activity: An analysis of five academic subjects. *American Educational Research Journal, 32*, 227-249.

Stodolsky, S., & Grossman, P. (1995b). Subject-matter differences in secondary schools: Connections to higher education. *New Directions in Teaching and Learning, 64*, 71-78.

Stoller, F. L. (2002). *Content-based instruction: A shell for language teaching or a framework for strategic language and content learning?* Paper presented at the TESOL convention. Retrieved from http://www.carla.umn.edu/cobaltt/modules/strategies/Stoller2002/READING1/stoller2002.htm

Stoller, F. L. (2008). Content-based instruction. In N. Van Deusen-Scholl & N. H. Hornberger (Eds.), *Encyclopaedia of language and education* (Vol. 4, pp. 59-70). New York: Springer Science/Business Media.

Stott, N. (2001). Helping ESL students become better readers: Schema theory applications and limitations. *The Internet TESOL Journal, VII*(11). Retrieved from http://iteslj.org/Articles/Stott-Schema.html

Swain, M. (1996). Discovering successful second language teaching strategies and practices: From programme evaluation to classroom experimentation. *Journal of Multilingual and Multicultural Development, 17*(2-4), 89-104.

Swain, M. (2005). The output hypothesis: Theory and research. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp. 471- 484). Mahwah, NJ: Lawrence Erlbaum.

Swain, M. (2006). Language, agency and collaboration in advanced language proficiency. In H. Byrnes (Ed.), *Advanced language learning: The contribution of Halliday and Vygotsky* (pp. 95-108). London: Continuum.

Swain, M., Brooks, L., & Tocalli-Beller, A. (2002). Peer-peer dialogue as a means of second language learning. *Annual Review of Applied Linguistics, 22*, 171-186.

Swain, M., & Deters, P. (2007). "New" mainstream SLA theory: Expanded and enriched. *The Modern Language Journal, 91*(5), 820-836.

Swain, M., & Lapkin, S. (2002). Talking it through: Two French immersion learners' response to reformulation. *International Journal of Educational Research, 37*(3-4), 285-304

Swain, M., Lapkin, S., Knouzi, I., & Suzuki, W. (2009). Languaging: University students learn the grammatical concept of voice in French. *The Modern Language Journal, 93*(1), 5-29.

Swain, M., & Suzuki, W. (2008). Interaction, output, and communicative language learning. In B. Spolsky & F. M. Hult (Eds.), *The handbook of educational Linguistics* (pp. 557-570). Malden, MA: Blackwell.

Tarone, E. (1974). *A discussion of the Dulay and Burt studies: Working Papers on Bilingualism, No. 4*, 1-15.

Taylor, K. L. (2010). Understanding the disciplines within the context of educational development. *New Directions in Teaching and Learning, 122*, 59-67.

Tellis, W. (1997). Application of a case study methodology. *The Qualitative Report, 3*(3**)**. Retrieved on 18 August, 2010 from: http://www.nova.edu/ssss/QR/QR3-3/tellis2.html

Timperley, H. (2008). *Teacher professional learning and development*. Brussels, Belgium: International Academy of Education.

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis [BES]*. Wellington: Ministry of Education.

Toohey, K. (1996). Learning English as a second language in kindergarten: A community of practice perspective. *The Canadian Modern Language Review, 52*(4), 549-576.

Toohey, K., & Derwing, T. M. (2008). Hidden losses: How demographics can encourage incorrect assumptions about ESL high school students' success. *Alberta Journal of Educational Research, 54*(2), 178.

Torgersen, J., Houston, D., & Rissman, L. (2007). *Improving literacy instruction in middle and high schools: A guide for principals*. Portsmouth, NH: RMC Research Corporation, Centre on Instruction.

Trumbull, E., & Farr, B. (2005). *Language and learning: What teachers need to know*. Norwood, MA: Christopher-Gordon.

Truscott, J. (1996). The case against grammar correction in L2 writing classes. *Language Learning, 46*(2), 327.

Truscott, J. (1999). What's wrong with oral grammar correction? *The Canadian Modern Language Review, 55*(4), 437- 456.

Ufagafa Lameta-Tufuga, E. (1994). *Using the Samoan language for academic learning tasks.* Unpublished masters thesis, Victoria University Wellington:

Unsworth, L. (1999). Developing critical understanding of the specialised language of school science and history texts: A functional grammatical perspective. *Journal of Adolescent & Adult Literacy, 42*(7), 508.

Valdes, G. (1997). Dual-language immersion programs: A cautionary note concerning the education of language-minority students. *Harvard Educational Review, 67*(3), 391.

Valdes, G. (2005). Bilingualism, heritage language learners, and SLA research: Opportunities lost or seized? *The Modern Language Journal, 89*(iii), 410- 426.

Valdes, G., Bunch, G., Snow, C., Lee, C., with Mathos, L. (2005). Enhancing the development of students' language. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world* (pp. 126-168). San Francisco, CA: John Wiley.

van Lier, L. (1992). Not the nine o'clock linguistics class: Investigating contingency grammar. *Language Awareness, 1*(2), 91-108.

Veel, R. (2006). The *Write it right* project: Linguistic modelling of secondary school and the workplace. In R. Whittaker, M. O'Donnell & A. McCabe (Eds.), *Language and literacy: Functional approaches* (pp. 66-92). London: Continuum.

Veel, R., & Coffin, C. (1996). Learning to think like an historian: The language of secondary school history. In R. Hasan & G. Williams (Eds.), *Literacy in society* (pp. 191-231). London: Longman.

Vygotsky, L. S. (1962). *Language and thought*. Cambridge MA: MIT Press.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wajnryb, R. (1990). *Grammar dictation*. Oxford: Oxford University Press.

Walqui, A. (2000). *Access and engagement: Program design and instructional approaches for immigrant students in secondary school* (Vol. 4). McHenry, Illinois: Centre for Applied Linguistics. Delta Systems.

Walqui, A. (2006). Scaffolding instruction for english language learners: A conceptual framework. *International Journal of Bilingual Education and Bilingualism, 9*(2), 159-180.

Walqui, A., & van Lier, L. (2010). *Scaffolding the academic success of adolescent English language learners*. San Francisco: WestEd.

Wannagat, U. (2007). Learning through L2: Content and language integrated learning (CLIL) and English as medium of instruction (EMI). *The International Journal of Bilingual Education and Bilingualism, 10*(5), 663-682.

Wedin, A. (2010). A restructured curriculum for second language learners: A self-fulfilling teacher strategy? *Language and Education, 24*(3), 171-183.

Wenger, E. (1998). Communities of practice: Learning as a social system. *The Systems Thinker, 9*(5), 1-11.

Whitehead, D. (2010). The year after: Sustaining the effects of literacy professional development in New Zealand secondary schools. *Language & Education, 24*(2), 133-149.

Winegardner, K. (2007). The case study method of scholarly research. 1-23. Retrieved from https://uascentral.uas.alaska.edu/onlinelib/Summer-2007/PADM635JD1/Windgardner_case_study_research.pdf

Woods, L., Priest, H. & Roberts, P. (2002). An overview of three different approaches to the interpretation of qualitative data. Part 2: practical illustrations. *Nurse Researcher, 10*(1), 43-51.

Wolff, D. (2002). *Content and language integrated learning: An evaluation of the German approach*. Brussels: Brussels University Press.

Wright, N. (2007). Building literacy communities of practice across subject disciplines in secondary schools. *Language & Education: An International Journal, 21*(5), 420-433.

Yin, R. K. (1994). *Case study research* (2nd ed., Vol. 5). Thousand Oaks, CA: SAGE.

Yin, R. K. (2009). *Case study research: Design and methods* (4th ed., Vol. 5). Los Angeles: Sage.

Yoon, B. (2008). Uninvited guests: The influence of teachers' roles and pedagogies on the positioning of English language learners in the regular classroom. *American Educational Research Journal, 45*(2), 495-522.

Zamel, V., & Spack, R. (2006). Teaching multilingual learners across the curriculum: Beyond the ESOL classroom and back again. *Journal of Basic Writing, 25*(2), 126-153.

Zuengler, J., & Miller, E. R. (2006). Cognitive and socio-cultural perspectives: Two parallel SLA worlds? *TESOL Quarterly, 40*(1), 35-58.

Zwiers, J. (2004-2005). The third language of academic English. *Educational Leadership, 62*(4), 60-63.

Zwiers, J. (2006). Integrating academic language, thinking, and content: Learning scaffolds for non-native speakers in the middle grades. *Journal of English for Academic Purposes, 5*(4), 317-332.

Zwiers, J. (2008). *Building academic language*. San Francisco: Jossey-Bass.

Appendices

Appendix 1: Ethical approval

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

19 December 2007

Margaret Gleeson
C/- School of Primary and Secondary Teacher Education
Victoria University of Wellington College of Education
Donald Street
Karori
Wellington

Dear Margaret

RE: Ethics application SPSTE/2007/69, RM 15363

I am pleased to advise you that your ethics application **'How do teachers in New Zealand schools approach teaching in their curriculum area in order to support the learning of the Year 12 English language learners?'** with the requested amendments, has been approved by the Victoria University of Wellington College of Education Ethics Committee.

[redacted]

Good luck with your research.

Yours Sincerely

J. A. Loveridge

Dr Judith Loveridge
Convenor
Victoria University of Wellington College of Education Ethics Committee

Appendix 2: Letter to principal

Dear ……..,

I am a PhD student in Education at Victoria University of Wellington. I am seeking your permission for one of your staff members to participate in my doctoral research.

The research topic

My research is investigating teaching approaches used by curriculum teachers of Year 12 students whose classes include students from non-English speaking backgrounds (NESB). The NESB students may be New Zealand-born students who speak a language other than English at home, like children of immigrant families from Pacific Island backgrounds. The students could also be migrant students from other countries or international fee-paying students. I would like to find out what good teachers do to help learning take place in their classes.

Your help

I am inviting schools that enrol immigrant, Pasifika and international students to participate in my study. This initially involves selecting curriculum teachers perceived to be both effective in their **subject area** and in **supporting English language learners in their Year 12 classes**. I am asking for your guidance in selecting a teacher who may fit these criteria and be willing to participate. If the teacher was a teacher of technology or mathematics this would provide a balance with the other participants whom I have already recruited.

While I am asking for your permission for a teacher to participate in the research, his/her participation would be completely voluntary. Following your suggestion of a suitable person and

more information about the project from me, the teacher would then decide whether or not to participate. However, I will not pursue this matter without your agreement.

The demands on the teacher

I imagine that the research will take between 3 and 5 hours of your teacher's time in total. The research will require the teacher to give me access to their classroom on one or two occasions in order to observe and audiotape his lesson/s. This will be at a time selected by the teacher. S/he will also be asked to complete two interviews about the process of teaching English language learners on audiotape. This process will occur between now and term 2, 2009.

The identities of the participants and schools will be kept confidential throughout. The individual interviews and questionnaires will be viewed by my supervisors and me alone. Reporting of findings will involve aggregated data so that individuals cannot be identified.

I will follow this email with a phone call to you in a week's time, unless I hear from you before then. If you have any questions or concerns, please email me: Margaret.gleeson@vuw.ac.nz or phone 463 9563.

Thank you for your assistance.

Yours sincerely,

Margaret Gleeson

Appendix 3: Letter to teacher

Dear ……..,

I am a PhD student in Education at Victoria University of Wellington. I am seeking your participation as an expert teacher in my doctoral research.

The research topic

My research is investigating teaching approaches used by curriculum teachers of Year 12 students whose classes include students from non-English speaking backgrounds (NESB). The NESB students may be New Zealand-born students who speak a language other than English at home, like children of immigrant families from Pacific Island backgrounds. The students could also be migrant students from other countries or international fee-paying students. I would like to find out what good teachers do to help learning take place in their classes.

Your help

I am inviting schools that enrol immigrant and international students to participate in my study. This initially involves selecting curriculum teachers perceived to be both effective in their subject area and in supporting English language learners in their Year 12 classes. Your principal believes that you fit this description.

While I am asking you to participate in this research, the participation would be completely voluntary. I will not contact you unless you tell your principal that you agree to be contacted by me. Following this contact, and more information about the project from me, you would then decide whether or not to participate.

The demands on the teacher

This research will require you (the teacher) to give me access to your classroom on one or two occasions in order to observe and audiotape your lessons. This will be at a time selected by you. You will also be asked to complete two interviews about the process of teaching English language learners on audiotape. This process will occur in Terms 2 and 3, 2008.

The identities of the participants and schools will be confidential when the research data are analysed. The individual interviews and questionnaires will be viewed by my supervisors and me alone. Findings will be reported in such a way that individuals cannot be identified.

I will follow this invitation with a phone call to your principal in a week's time. If you have any questions or concerns before then, please email me: Margaret.gleeson@vuw.ac.nz or phone 463 9563.

Thank you for your assistance.

Yours sincerely,

Margaret Gleeson

Appendix 4: Teacher consent forms

Victoria University of Wellington

Consent form for teacher participation in interviews and classroom observation

How do teachers in New Zealand schools approach teaching in their curriculum area in order to support the learning of Year 12 English language learners?

Consent form

- ❑ I have read the information sheet relating to the purpose and nature of this research project. I have understood this information.
- ❑ I understand that I may ask any questions about the study at any time during participation
- ❑ I understand that I have the right to decline to answer any particular question
- ❑ I agree to participate in this study under the conditions set out in the information sheet.
- ❑ I understand that records of any data from me will be kept confidential and that my identity will not be revealed.
- ❑ I understand that my participation is voluntary and I have the right to withdraw from the research project until data analysis has begun - approximately 28 February, 2009.

Full name ……..

School ……..

I wish to receive feedback from this project by being sent a summary of the research, This will not be available until 2009-2010.

- ❑ Yes
- ❑ No

Email address ……

Signature ……..

Date ……..

Appendix 5: Questionnaire

Thank you for agreeing to take part in this research. Before we meet for our first interview, please will you answer the following questions:

Teacher's background

1. Name ……..
2. Preferred pseudonym……
3. School ……..
4. Teaching subjects ……

   ……..
5. Ethnicity ……..
6. Languages spoken at home ……
7. Formal qualifications …….

   …….

   …….
8. Qualifications relating to language learning eg Dip TESSOL

   ……

   ……
9. Professional development related to language learning e.g. Building Blocks, Literacy, Integrating Language and Science/Mathematics

   ……

   ……

   ……..

10. Length of teaching career so far: in New Zealand ……

……..

Elsewhere……

……..

Teacher's beliefs about language learning

Please indicate the extent to which you agree or disagree with the following statements. In the interview, I will be exploring these issues in more depth and you may wish to elaborate at that time.

1. I believe that all students in my class are capable of achieving academic success

Strongly agree **Agree** **Disagree** **Strongly disagree**

2. I know about the language and educational backgrounds of the students in my classes

To a Great Extent **Somewhat** **Very Little** **Not at All**

3. I investigate the students' prior knowledge of each topic

To a Great Extent **Somewhat** **Very Little** **Not at All**

4. I can identify the language demands of my subject

To a Great Extent **Somewhat** **Very Little** **Not at All**

5. I know how to teach the language of my subject

To a Great Extent **Somewhat** **Very Little** **Not at All**

6. I provide students with a variety of opportunities to engage with new concepts

To a Great Extent **Somewhat** **Very Little** **Not at All**

7. I make links between the world-view of my subject and the students' world-views

To a Great Extent **Somewhat** **Very Little** **Not at All**

8. I construct tasks that require students to use both oral and written language

To a Great Extent **Somewhat** **Very Little** **Not at All**

9. I construct tasks that require students to work together

To a Great Extent **Somewhat** **Very Little** **Not at All**

10. I provide opportunities for students to evaluate their progress

To a Great Extent **Somewhat** **Very Little** **Not at All**

Likert scales retrieved on 26/11/2007 and adapted from

: http://www.gifted.uconn.edu/siegle/research/Instrument%20Reliability%20and%20Validity/Likert.html

Teacher's practices

1. In general, how do you adapt your teaching to accommodate the English Language Learners (ELLs) in your classes?

.....

.....

2. What three practices have the biggest impact on ELLs' learning in your classes?

   a).....

   .....

   b).....

   .....

   c).....

   .....

3. Do you have any other comments you would like to make?

.....

.....

.....

.....

Thank you for taking part in this survey.

Appendix 6: Prompts for semi-structured interview

How do teachers describe what they do to support EALs' learning within their curriculum area?

What do teachers believe to be effective approaches for EALs ?

What steps do teachers believe that they take to support EALs' language development in their subject?

Why do they value these practices?

What do they report having learnt about second language acquisition?

What professional development relating to language learning have teachers undertaken?

How do teachers establish their learners' existing subject knowledge?

How do teachers establish their learners' existing English proficiency?

How do teachers measure success for these learners?

Appendix 7: Alignment of questionnaire and interview questions

Focus questions for interview	**Questionnaire items**
What do teachers believe to be effective approaches for ELLs	Q6, Q8, Q9 Teachers' practices Q1
How do teachers establish their learners' existing English proficiency?	Q2
How do teachers establish their learners' existing subject knowledge?	Q3, Q7
What do they report having learnt about second language acquisition?	Teachers' background Q8
How do teachers measure success for these learners?	Q1, Q10
What professional development relating to language learning have teachers undertaken?	Teachers' background Q9
What steps do teachers believe that they take to support ELLs' language development in their subject?	Q4, Q5 Teachers' practices Q12, Q3
Why do they value these practices?	

Appendix 8: Economics task sheet

Human Treasure Hunt: Economic Concepts to date

Name…….. Date……..

Question	Signature of answerer	Answer	Check: is this answer right or wrong?
What are the components that make up aggregate demand? Write down the formula.			
What is fiscal drag? How is this related to inflation? Describe the inflationary spiral.			
What is free trade? What is fair trade? Is there any potential conflict between the two?			
Give and example of an indirect tax and a direct tax. How can we distinguish between them?			
What is the cause of a change in quantity demand? State the law of demand.			
What is monetary policy? Give an example of how monetary policy works.			
Who is the current Minister of Finance and who was his predecessor? Who is the Governor of the Reserve bank and who was his predecessor? What former Minister of Finance is now a member of the ACT party?			
How does an increase in the OCR impact on the NZ dollar? How does this affect net exports?			
What is the inflation target in the Policy Targets Agreement? What is the current OCR rate? What is the reason for it being so low at the moment?			
Name 6 of the 8 factors which change supply.			

Question	Signature of answerer	Answer	Check: is this answer right or wrong?
What is the difference between inflation, disinflation, and deflation?			
Describe in economic terms what is happening when there is a depreciation of the NZ dollar.			
Explain the effect of inflation on consumers. Can you use an example from your own experience?			
What are the equations for calculating Index Numbers and Inflation Rates and what is the main difference between them?			

Appendix 9: Accounting worksheet used to supplement the textbook

Statement of Cashflows
Calculating Cash from debtors:

Take this example:

	31/3/03	31/3/04
Accounts Receivable	$30,000	$45,000
Credit Sales		$120,000
Bad Debts		$2,000
Discount Allowed		$300

Formula to find out how much cash we actually received from our debtors.

Opening Accounts Receivable
Plus credit sales made in the period
Less bad debts
Less discount allowed
Less closing Accounts Receivable
= Cash from Debtors

Or reconstruct the Accounts Receivable ledger account

ACCOUNTS RECEIVABLE

Date		DR	CR	BAL.	
1/4/03	Balance			30,000	dr
31/3/04	Sales (credit)	120,000			
	Bad Debts		2,000		
	Discount Allowed		300		
	Bank		?????	45,000	dr

This number: goes in as a cash receipt as cash from customers.

Task:
Rex Taihape of Taihape traders is trying to work out his cash flows for the year. Rex's dog Roxy, ate the cash records, but Rex was able to retrieve the following:

	31/3/03	31/3/04
Accounts Receivable	44,450	56,700
Cash Sales		12,600
Credit Sales		82,300
Discount Allowed		1,850
Bad Debts		3,200

1. Reconstruct the accounts receivable to find the cash received from debtors.
2. What is the total cash from customers?

Calculating Cash paid to creditors/ suppliers:

	31/3/03	31/3/04
Accounts payable	$23,000	$39,000
Credit purchases		$57,000
Discount received		$1,000

Formula to find out how much cash we actually paid to our creditors.

Opening Accounts Payable
Plus credit purchases made in the period
Less discount received
Less closing Accounts Payable
= Cash paid to creditors

Or reconstruct the Accounts Payable ledger account

ACCOUNTS PAYABLE

Date		DR	CR	BAL.	
1/4/03	Balance			23,000	cr
31/3/04	Inventory (credit purchase)		57,000		
	Discount Received	1,000			
	Bank	?????		39,000	cr

This number: goes in as a cash payment called cash paid to suppliers.

Task:

	31/3/07	31/3/08
Accounts payable	$47,000	$29,000
Credit purchases		$33,600
Discount Received		$1,600

Calculate the cash paid to Suppliers
Show the accounts payable ledger

Cashflow exercises

A. Carter Radio Supplies have the following data relating to cash from customers and cash paid to suppliers

	1.7.03	30.6.04
Accounts Receivable	4,500	2,150
Accounts Payable	2,450	2,650
Sales (all credit)		13,800
Credit purchases		4920
Discount Received		52
Bad Debts		80
Discount Allowed		45

1. Reconstruct the accounts receivable ledger to find cash from debtors
2. Reconstruct the accounts payable account to find cash paid to suppliers

B. Hope Fashions have the following information:

	1.7.03	30.6.04
Bank	3,000 dr	1000cr
Accounts Receivable	16,000	12,000
Accounts Payable	14,000	10,000
Sales - credit		64,000
Sales - cash		27,000
Credit purchases		16,000
Discount Received		1,000
Cash paid to employees		25,950
Other cash expenses		37,000
Interest paid		1,500
Discount Allowed		400
Bad Debts		650
Cash Drawings		13,000
Cash from sale of van		3,500
Loan repayment		5,000

1. Reconstruct the accounts receivable ledger to determine cash from debtors
2. Calculate total cash from customers
3. Reconstruct the accounts payable ledger to find cash paid to suppliers
4. Use the answers to 1-3 above and the rest of the information to prepare a statement of cashflows for the year ended 30.6.04

C. **Calculating Cash Received from Customers and Cash Paid to Suppliers Figures**

Question 1 Use the information below to calculate the cash collected from customers and the amount of cash paid to suppliers. *(Show your working)*.

Credit Sales	15000
Bad Debts	1000
Credit Purchases	5000

	1-Jun-15	30-Jun-15
Accounts Receivable	8000	11000
Accounts Payable	9000	5000

D. **Question 2** Use the information below to calculate the cash collected from debtors and the amount of cash paid to creditors. *(Show your working)*.

Credit Sales	17000
Bad Debts	800
Credit Purchases	23000

	1-Oct-07	31-Oct-07
Accounts Receivable	1900	3200
Accounts Payable	6400	7300

E. **Question 3.** Using the following information, present a Statement of Cash Flows for *Push and Pull*, a shop that sells magnets for the year ended 31 March 2008.

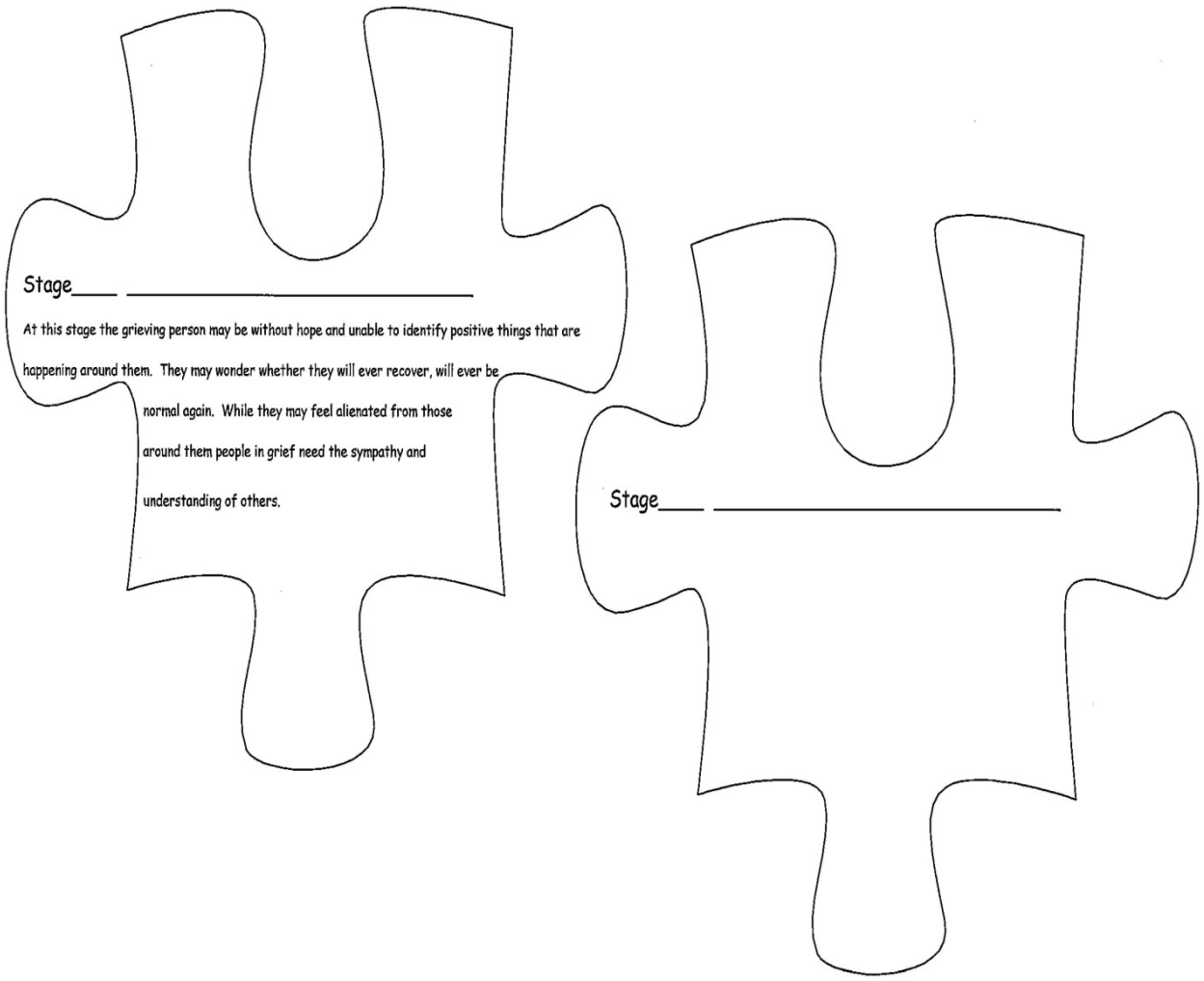
Interest received	1200
Credit sales	33000
Payment of loan principal	4000
Cash drawings	19000
Payment of wages	55000
Cash sales	103300
Depreciation expense	1750
Cash paid for computer	3000
Cash from sale of furniture	5000
Loss on the sale of the furniture	250
Dividends received	600
Credit purchases	23000
Doubtful debts expense	500
Payment of loan interest	770
Expenses paid	24800

Additional data

	1-Apr-07	31-Mar-08
Accounts Receivable	1900	3200
Accounts Payable	6400	7300
Bank balance	7300	????

Do ex. 4-16 p232.

Appendix 10: Example of religion jigsaw task sheet



Appendix 11: Statistics assessment task

90286

Level 2 Mathematics, 2009
90286 Find and use straightforward derivatives and integrals

Credits: Four

Answer ALL questions in the spaces provided in this booklet.

Show ALL working for ALL questions.

Check that this booklet has pages 2–5 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

For Assessor's use only

Achievement Criteria

Achievement		Achievement with Merit		Achievement with Excellence	
Find and use straightforward derivatives and integrals.		Apply calculus techniques to solve straightforward problems.		Apply calculus techniques to solve problems.	
Overall level of Performance					

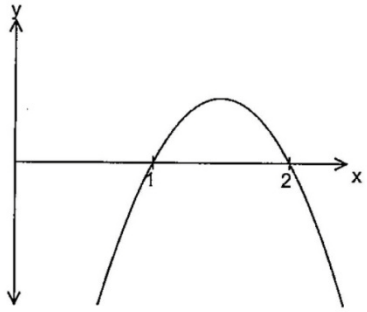
You are advised to spend 30 minutes answering the questions in this booklet.

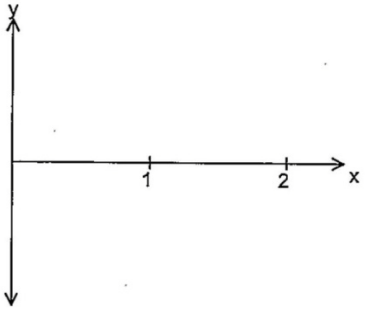
Show ALL working. For every question you are required to show differentiation or integration. Calculator answers alone are not sufficient.

Question One

a) Sketch the gradient function of the graph drawn below.

A





A b) (i) Find the x coordinate of the point on the curve $f(x) = x^2 - 4x + 7$ where the gradient is -6.

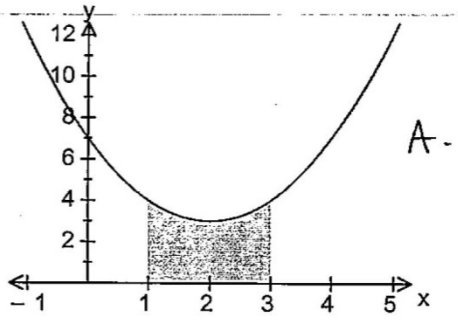
M 、(ii) Find the equation of the tangent to the curve $f(x)=x^2-4x+7$ at the point (-1,12).

c) The tangent to the graph of $y=ax^2+bx+c$ has gradient of 4 at $x=2$. (E)、
There is a stationary point at (1,-3)
Find the values of a, b and c.

Question Two

a) Given $\frac{dy}{dx} = 2.4x - 1.6$ and $y = 10$ when $x = 2$ determine $y = f(x)$. A .

b) Calculate the shaded area between the curve $f(x) = x^2 - 4x + 7$ and the x-axis between $x = 1$ and $x = 3$



A.

[redacted]

c) A particle moves along a straight line from a fixed point A so that its velocity v (cms^{-1}) at time t seconds is given by $v = 24t - 16$.
After 2 seconds the particle is 10 cm from A.
How far from the A is the particle when its velocity is 20 cms^{-1}? M .

d) Find the maximum value of $3xy$ given $y = x^2 - 4x - 3$.
You must indicate how you know that the value you obtained is a maximum. E .

[redacted]

Glossary of acronyms and terms

BICS	Basic interpersonal communication skills
CALP	Cognitive academic language proficiency
CLIL	Content and language integrated learning, a popular approach for integrating language and content learning in European countries
EAL students	Students from language backgrounds other than English learning in schools through the medium of English
EFL	English as a foreign language or English taught as a subject in a country where English is not the dominant language. This is often used in contrast to *ESOL* which is taught in a country where English is the dominant language
EL1	Students from an English speaking background who have English as their dominant language.
English curriculum	The learning area of English studied as a compulsory subject in most school years at school
ELLs	English language learners- used interchangeably with EAL students to refer to students from non-English speaking backgrounds
ESL	English as a second language- used synonymously with ESOL to refer to the subject where EAL students learn English language rather than the English curriculum
ESOL	A de facto subject "English to speakers of other languages" taught to students who are learning English as an additional language. This contrasts with English *curriculum* learnt by students with English as their dominant language.
FFP	Foreign fee-paying students (sometimes interpreted as Full fee-paying students)
i + 1	Refers to language only just beyond the current proficiency of a student. Also known as comprehensible input
IELTS	International English Language Testing System, an international language test often used to measure students' ability to learn in the medium of English in a tertiary environment
IRF	A pattern of questioning commonly used in classrooms: initiation, response, feedback
L1	The dominant language or mother tongue used by a learner
L2	Any subsequent language acquired in addition to the L1 and used by a bilingual or polyglot learner
NCEA	National Certificate of Educational Achievement, used as a benchmark for learning in New Zealand secondary schools
PD	Teacher professional development, or in-service teacher education
QTEL	Quality Teaching for English Learners a professional development programme operating in parts of the USA to educate teachers to engage students in language and content learning
SAT	Scholastic aptitude test including critical reading, mathematics and writing used to assess students' readiness for entry to college in the USA
SDIE	Specially designed academic instruction in English, a sheltered approach to teaching English language learners taken by teachers in parts of the USA
SIOP	Sheltered Instruction Observation Protocol, a professional development programmes teaching teachers how to integrate content and language instruction popular in the USA
TESSOL	Teaching English in schools to speakers of other languages, as the subject ESOL
TOEFL	Test of English as a Foreign Language, an international language test often used to measure students' ability to learn in the medium of English in a tertiary environment