Supporting students who are deaf and hard of hearing in regular schools:
Influences on the support activities provided by itinerant teachers


Submitted to fulfil
the requirement of
Doctor of Philosophy (Education)

The thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available worldwide when deposited in the University’s Digital Repository, subject to the provisions of the Copyright Act 1968.

Signed
This thesis is dedicated to the children who are deaf or hard of hearing that I have had the privilege to meet and assist, and to those children who may benefit from the research and reflection that may follow from this work.

I would like to thank a number of people for their encouragement and support. My wife Diana and my son Jesse have been endlessly supportive and patient. Br. Gerry McGrath provided the initial inspiration with his enthusiasm for assisting the language development of children and his willingness to think radically, and Alan Kelly has continued to challenge and inspire me. My colleagues within the Department of Education and Training have assisted and encouraged me over many years.

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Abstract

The study reported in this thesis investigated the influences on the choice of support activities by a total population of 14 itinerant teachers who work with 59 students who are deaf and hard of hearing in the Australian Capital Territory (ACT). The support activities of the itinerant teachers were surveyed and compared with student files that documented the learning and development needs of their individual students, without exclusions. It was found that direct teaching formed the majority of the support activities, which were primarily focused on the students’ assessed and documented needs in regard to the development of skills in language, listening, and literacy. The teachers generally used combinations of explicit skill-based teaching, and teaching that integrated listening, speech, and language goals with the class curriculum and with the interests of their students. The provision of conversation was strongly supported by the itinerant teachers, as was the need for consultation and collaboration with the class teachers. Interviews and written comments were used to explore influences, other than student needs, on the support activities. Those influences included a strong collegial team structure, the availability of a program to teach auditory skills, and the requirements for consultation and reviews from legislation and schools. Individual education plans and summative tests were not found to be significant influences, but there was a consistent use of informal language progress monitoring to inform teaching activities. The findings were consistent across (a) a variety of school settings, including students with varied communication needs and those with additional disabilities, and (b) across a range of itinerant teachers who came from a variety of backgrounds. The results support the critical role of itinerant teachers in supporting language development by both explicit teaching and indirect activities.
## Glossary

### Abbreviations

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<th>Term</th>
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<tr>
<td>ACT</td>
<td>Australian Capital Territory</td>
<td>A distinct geographic and political territory in Australia containing Australia’s capital city of Canberra, which contains 98% of the ACT population.</td>
</tr>
<tr>
<td>ASP</td>
<td>Auditory skills program</td>
<td>A program developed in New South Wales (NSW) a state in Australia, by Romanik (1990) to teach auditory skills.</td>
</tr>
<tr>
<td>DHH</td>
<td>Deaf and hard of hearing</td>
<td>The commonly used way of referring to students who have a hearing loss or who may identify with the Deaf community.</td>
</tr>
<tr>
<td>IEPs or ILPs</td>
<td>Individual Education Plans</td>
<td>Both are documents for directing the teaching and resources used to assist with the education or learning of students with a disability. IEP is used in the United States (US), the United Kingdom (UK) and in some parts of Australia. ILP is used in the ACT.</td>
</tr>
<tr>
<td>TOD</td>
<td>Teacher of the Deaf</td>
<td>Teachers deemed by the relevant educational authorities to teach DHH students: these include itinerant teachers and teachers in segregated settings.</td>
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**Terminology**

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<td><strong>Communication teaching</strong></td>
<td>Teaching any form of receptive or expressive communication: including listening skills, speech, spoken and signed language, reading and writing, and alternative and augmentative communication.</td>
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<tr>
<td><strong>Hearing support teachers</strong></td>
<td>The term currently used for itinerant hearing support teachers in the ACT.</td>
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<td><strong>Itinerant teachers</strong></td>
<td>Teachers of the deaf who travel between different school settings to teach DHH students.</td>
</tr>
<tr>
<td><strong>Language teaching</strong></td>
<td>Teaching the words and grammar of face-to-face communication as in spoken or signed language. Not to be confused with teaching literacy or language arts.</td>
</tr>
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<td><strong>Mainstream and mainstream settings</strong></td>
<td>Refers to schools and classes that are not segregated for DHH students. They may be segregated for students with other disabilities, such as a resource room for students with autism, or schools for students with cognitive disabilities.</td>
</tr>
<tr>
<td><strong>Support activities</strong></td>
<td>Supporting the students by direct teaching activities and by indirect activities such as providing consultations, giving presentations, and organising and attending meetings. Generally shortened to activities.</td>
</tr>
<tr>
<td><strong>Units or resource rooms</strong></td>
<td>Separate classrooms within mainstream schools for students with disabilities, termed self-contained classrooms in the US and units in Australia.</td>
</tr>
<tr>
<td><strong>Withdrawal teaching</strong></td>
<td>Pull-out teaching in the US, where students are taught in a room other than the classroom.</td>
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Chapter 1: Background to the Project

Visitors to a university teacher education program in Sydney, Australia, can view two old photographs on the walls of a library that was built on the site of what was once a residential school for students who were deaf. These photographs provide evidence of typical class lessons given in the early years of the school. The boys in the photographs were learning to mend shoes, the girls were learning to sew: both possible activities for students with normal intelligence who had difficulties communicating in any form: speech, sign or written. The message was clear: these students could learn, but deafness severely limited their communication abilities. The task of the specialist teachers of the deaf was also clear: to develop communication skills but also to teach useful occupations that did not require extensive communicative expertise.

The provision of educational services for deaf and hard of hearing students has changed significantly, with the majority now being educated in their local schools alongside their hearing siblings and neighbours. In the United States (US), in 2000, the proportion of Deaf and Hard of Hearing students receiving itinerant teacher support services in schools was 43% as estimated by Mitchell, and this had increased to 65% by 2006 (Mitchell & Karchmer, 2006). In Australia, since Hyde and Power (2004a) concluded that the “overwhelming majority” (p.302) of Australian DHH students were in regular schools, the trend has continued. In one Australian educational jurisdiction, the Australian Capital Territory (ACT), the location of the study reported in this thesis, there are neither residential or segregated schools nor segregated classes for deaf students. All of the identified DHH students are educated in their local schools, and all are taught primarily by regular school teachers—never cobblling and rarely sewing. Instead, schools are obliged to provide access to the curriculum for all children, with support generally provided by itinerant teachers of the deaf.
1.1 Itinerant Teachers

The changes in the educational settings of DHH students have led to substantial changes in the roles of specialist teachers of the deaf. With those changes, researchers have sought to investigate the role of the itinerant teachers (Checker, Remine, & Brown, 2009; Hyde & Power, 2004a; Luckner & Ayantoye, 2013). An itinerant teacher of DHH students is “a professional who provides instruction and consultation for students who are deaf or hard of hearing and most generally travels from school to school” (Luckner, 2006, p. 94). Itinerant teachers have only a limited amount of time per student, ranging from less than one hour per week to more than four (Power & Hyde, 2003). This mode of teaching differs from that provided by teachers of the deaf to DHH students in segregated schools, self-contained classrooms (termed “deaf units” in some locations), and resource rooms (Luckner & Ayantoye, 2013). This different mode of teaching has been the subject of two books (Bullard, 2003; M. D. Smith, 1997), descriptive studies (e.g. Clifford, 2008; Foster & Cue, 2009), and a number of surveys (Alturki, 2002; Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Howell, 2002; Luckner & Miller, 1994; Power & Hyde, 2002; Reed, 2003). For the most part, the literature relating to the role of itinerant teacher consists of descriptions of teacher activities and does not seek to relate those activities to student needs (i.e., student abilities that are perceived as being amenable to interventions).

Among the studies of itinerant teachers there is a puzzling contrast between the recommendations of the researchers and the itinerant teacher support activities they describe. An example of this is found by collating the results from three studies that surveyed itinerant teachers to examine support activities and attitudes (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994). The two more recent studies replicated many of the survey questions of the first (Luckner & Miller, 1994),
with similar results. Together, the three studies describe itinerant teachers in two countries over 20 years. There were four consistent findings: (a) itinerant teachers generally reported that their service was effective; (b) the itinerant teachers thought that the various consultation and collaborative activities were the most important part of their role; (c) over half of all activities were unspecified direct services to students; and (d) most of the direct teaching took place in withdrawal settings. A puzzling outcome was that the researchers did not endorse the use of direct teaching services or the use of withdrawal even though they had not subjected either to detailed scrutiny. It is interesting that in each of the surveys, the majority of the itinerant teachers thought that their service was effective, yet they used direct teaching—a practice not favoured by the researchers—for over half of their time. This suggests a disjunction between the activities of the itinerant teachers and the recommendations of the researchers in these three studies.

A similar disjunction between theory and practice was evident in the results of a study by Foster and Cue (2009) who found that 65% of itinerant teachers had learned the majority of their skills and knowledge on the job, rather than in professional preparation programs. A lack of clarity about the activities of itinerant teachers was also present in the study by Luckner and Ayantoyne (2013) who found that 40% of itinerant teachers had never seen a job description (38% for the Hyde and Power (2004b) survey), with 22% of the sample indicating that the job description did not match the actual responsibilities. It appears that what itinerant teachers regard as responsibilities may not equate with the recommendations of researchers, teacher preparation programs, or educational administrators.
There are persistent questions in the literature about itinerant teacher activities, as expressed by Moores in his call for more information, particularly relating to student outcomes:

Deaf and hard of hearing students in inclusive classrooms who receive support services from an itinerant teacher of the deaf represent the single largest bloc of students—more than students in residential schools, day schools for the deaf, and self-contained classrooms for deaf students but our knowledge of their instruction and academic outcomes is negligible. It would be a disservice to continue to ignore them (2008, p. 274).

The context for this request for more information about instructional activities and academic outcomes was Moores’ (2008) comments on a study by Clifford (2008), who critically examined the instructional episodes of a sample of itinerant teachers in the light of teacher effectiveness research. The 30-60 minute lessons were evaluated according to the effectiveness of the academic instruction. In practice, almost all of the instruction was in language arts, unrelated to academic content, and was often “disrupted” by equipment maintenance and conversing with the student (Clifford, 2008, p.109). There is a contrast, once again, between the recorded activities of the itinerant teachers and the focus of the researcher. The itinerant teachers provided equipment maintenance and conversation, and taught language, vocabulary, reading, and grammar, generally without academic content. The researcher was evaluating the teaching of academic content as if the itinerant teachers were an academic tutor.

Further questions about itinerant teacher activities were raised from the most recent of the three surveys cited earlier, by Luckner and Ayantoye: “Although the itinerant model of service delivery has been in use for almost 40 years, no research has been conducted to examine the efficacy of the approach or to identify best practices” (p.
1.1 Itinerant Teachers

(416) Attending to this serious lack of research requires a comprehensive description of itinerant teacher activities in terms of the student outcomes being sought, so that efficacy can be examined in relationship to student outcomes.

This brief survey of the activities of itinerant teachers has highlighted two issues related to the role of itinerant teachers. First, over half of the itinerant teacher activities have been unexamined because they were either categorised as direct services or because the researcher was focused on other activities such as consultation. Second, there is an increasing call to evaluate the outcomes of itinerant teacher activities. The specific outcomes, however, seem to be in dispute because it is not clear which student needs are the responsibilities of itinerant teachers.

1.2 Student Needs

There are many possible student needs including, among others: assistance with specific academic subjects including literacy, assistance with study skills and social skills, and the development of communication skills. Some needs may be core needs that underlie others. The possible hierarchy in these needs, as applied to DHH students, will now be examined by focusing first on literacy, which has attracted the most attention in the research literature. The 964 studies of literacy and DHH students between 1963 and 2003, reviewed by Luckner, Sebald, Cooney, Young and Muir (2005/2006), illustrated the importance of this topic. One reason for this focus on literacy is that it is the critical academic skill that underpins most other subject prowess (Akamatsu, Mayer, & Hardy-Braz, 2008), and it is a crucial skill for future employment. A commonly stated statistic, however, is that the majority of DHH students leave school with literacy skills equivalent to a grade 4 level (Marschark et al., 2009), although there is some recent evidence that suggests a slightly better picture (Easterbrooks & Beal-Alvarez, 2012), and there are some DHH students who read at
grade level and become successful writers (Luckner et al., 2005/2006). There is little dispute, however, that there has been only marginal improvement in overall literacy levels over the 40 years of the research reviewed by Luckner et al. (2005/2006), despite the change in educational settings to more mainstream environments (Marschark et al., 2009).

This minimal improvement in DHH student outcomes, despite the extensive research and the change to more inclusive settings, has remained a challenge in the field of deaf education. Luckner et al. (2005/2006, p.444) summarized the reasons for these poor literacy results as: restricted vocabulary, confused syntax, a lack of language comprehension, poor language fluency, and a lack of access to the phonologic code. These reasons were supported by other researchers (Moeller, Tomblin, Yoshinaga-Itano, McDonald Connor, & Jerger, 2007) and are quite clearly different aspects of a common issue, communication skills. A further difficulty given by Luckner is one also faced by many hearing children—limited early childhood literacy experiences. Communication difficulties may also play a role with early childhood experiences (Luckner et al., 2005/2006). In keeping with this understanding of the importance of well-developed communication skills for literacy development, the focus for literacy research is changing from print-based assistance for code-related skills to an understanding of the fundamental importance of the language and cognitive abilities underlying literacy abilities (Akamatsu et al., 2008; Marschark et al., 2009). This suggests a possible theoretical explanation for why the itinerant teachers in the Clifford (2008) study primarily taught literacy without academic content. The primacy of language may also be an explanation for the high proportion of direct teaching in the three studies already cited, but there is no evidence to support either of these speculations.
1.3 The Critical Importance of Language Ability

Research has established the efficacy of early intervention for improving the language outcomes of DHH children (Kennedy et al., 2008; Moeller, Carr, Seaver, Stredler-Brown, & Holzinger, 2013; Yoshinaga-Itano, Sedey, Coulter, & Meh, 1998) and by implication has provided support for the critical importance of language for DHH students. Research with cochlear implants has also focused on language development as a key outcome measure (Boons et al., 2013b; DesJardin & Eisenberg, 2007; Geers, Moog, Biedenstein, Brenner, & Hayes, 2009; Nicholas & Geers, 2007; R. Punch & Hyde, 2010; Svirsky, Stallings, Ying, Lento, & Leonard, 2002). Both types of research have a focus on enabling DHH students to begin school with age appropriate language. This developmental process has been modelled by Summerfield and Marshall (1999) as a “cascade of benefits”. The model was verified by a large cross-sectional survey in the United Kingdom (UK) of 2858 DHH students who received some form of early intervention, of whom 14% were fitted with cochlear implants. This model contained a hierarchy of student needs, with academic needs being the primary responsibility of the mainstream teachers. According to this model, the DHH students had sufficient listening, speech, and language skills to enable them to engage with mainstream settings.

Unfortunately, many DHH students do not begin school with age appropriate language (Marschark & Spencer, 2010), in spite of the consensus about best practices in family-centred early intervention (Moeller et al., 2013), for several possible reasons. The language learning system is not robust under the pressure of a hearing loss (Hirsh-Pasek & Burchinal, 2006). Some children experience delay in receiving appropriate amplification, sometimes due to a late onset hearing loss, others move into and out of
support agencies, whereas others may have additional disabilities that have multiplicative impacts on language developmental outcomes (Marschark & Spencer, 2010).

Even if DHH students present at school with intact language systems, they may still have difficulty continuing to make language growth equal to their peers, with the ensuing language difficulties likely to persist into secondary school (Blamey et al., 2001; Geers, Tobey, Moog, & Brenner, 2008). Even children with minimal and mild hearing losses are at risk of academic delays without adequate support (Bess, Dodd-Murphy, & Parker, 1998) and even academically successful students with high level communication skills require extra assistance throughout their school lives (Eriks-Brophy, Durieux-Smith, & Olds, 2006). It is not clear from the literature, however, how itinerant teachers contribute to communication development, even though there are strong arguments for how this can be effective, based on experiences and research from early intervention (DesJardin & Eisenberg, 2007; Rhoades, 2006).

Mainstream schools are difficult communicative environments. Noisy and reverberant acoustic conditions are found in many classrooms (Crandell & Smaldino, 2000); and the linguistic environments often provide fewer interactions and more complex cognitive demands than those experienced in preschool years, particularly when compared with home environments. At school, class teachers often underestimate the difficulties of DHH students (Marschark & Hauser, 2008), and they may have little time, opportunity, or skill in providing supportive interactions with the DHH student (Cameron, 2005). What is obvious from these observations relating to the mainstream school environment is that mainstream schools require consultative assistance to effectively include DHH students, to support their language development, and to allow them to access the class curriculum (Eriks-Brophy et al., 2006; Powers, 2002). There is
no evidence, however, that in the absence of specialised language therapy, consultative support and an optimal classroom environment will be sufficient to enable a DHH student with a language delay to catch up to their peers in language development. Consultative assistance has been provided by itinerant teachers (Bullard, 2003; Yarger & Luckner, 1999) and, as discussed earlier, there have been a number of studies that have examined and validated this role (Eriks-Brophy et al., 2006; Hyde & Power, 2004a; Luckner, 2006). There have been no studies, however, that have validated the provision of language teaching by itinerant teachers.

This brief examination has indicated that there is a hierarchy of needs and that language is a critical variable that underlies literacy and academic needs of DHH students. Despite improvements in early intervention and cochlear implants, there are still DHH students who do not have the language skills of their peers. DHH students with delayed language will still require assistance to develop and maintain linguistic competencies (Boons et al., 2013a), and will also require a range of consultative and supportive activities to continue this development at school.

Two possible roles for itinerant teachers have thus emerged. One is to directly develop communication skills, the other to provide indirect support for communication skills by means of consultation to schools. Providing consultation to schools has been the subject of many research studies, but providing direct communication assistance to students has received little attention. Some of the reasons for these research priorities will be examined in the next section.

1.4 Previous Itinerant Teacher Research

Research efforts in the field of education of deaf students have historically dealt with broader issues: the best mode of communication, the best educational settings, how hearing loss could be remediated through amplification, and more recently, how
inclusion and early intervention could improve educational outcomes. The debate about spoken or signed communication still continues and will not be explored here except to note a growing consensus that competence in language of any form is vital for cognitive, emotional, social, and academic development (Marschark & Spencer, 2010).

In the absence of other disabilities, DHH children can develop age appropriate language, given the optimal environment (Stacey, Fortnum, Barton, & Summerfield, 2006; Yoshinaga-Itano et al., 1998). These and other developments have served to raise vocational expectations for DHH learners to include a wide range of potential outcomes: lawyers, actors, writers, and therapists rather than only cobblers and seamstresses.

Debates regarding optimal educational settings are far less prevalent because parents are increasingly choosing mainstream schools for their DHH children’s education (Mitchell, 2004), in spite of some professional opinions (Stinson, 1994). The mainstream school choice is not new; it was available decades ago, but mostly only for the hard of hearing students who had well-developed spoken language and few other disabilities (Allen, 1992). It is still the case that DHH students with greater needs and additional disabilities are more likely to be found in segregated settings, but the vast majority of all DHH students are now presenting at mainstream schools where legislation mandates the provision of specialised support services in the local setting. In the Australian context the relevant legislation is the Disability Standards for Education (DSE) (“Disability Standards in Education,” 2005).

Legislation is one example of influences on itinerant teachers that are external to the needs of the individual student. Government and/or educational system policies are another external influence. Such policies include systemic adoption of inclusive educational principles (Foreman & Arthur-Kelly, 2008; Giangreco, Carter, Doyle, & Suter, 2010; Powers, 2002) and specific policies such as mandating the use of individual
1.4 Previous Research

learning plans for all students with disabilities (ACT Government, 2010). Further, itinerant teachers may be influenced in their choice of teaching activities by their individual beliefs and backgrounds (P. M. Brown, 2013) as well as by developments in regular education, such as the widespread use of the quality teaching framework (Gore, 2008). Finally, there may be influences from the beliefs of both the classroom teacher (Eriks-Brophy et al., 2006), and the parents (Eriks-Brophy et al., 2007)—particularly because of the consultative and collaborative role of the itinerant teacher.

It is apparent that there is an absence of information about the activities that itinerant teachers actually undertake in the course of their interactions with DHH students in mainstream settings. It is also apparent that there is a need for more information about how those activities relate to the developmental needs of DHH students—and how those needs are identified. The link to student needs has occurred to a limited extent in some more recent work in this area (Antia & Jones, 2010; Foster & Cue, 2009) but there remains a gap in this information, particularly as it relates to the Australian context. Specifically, given the critical importance of student communication needs, it would appear to be important to understand how language development or remediation needs are addressed by the activities of the itinerant teachers. Determining how itinerant teachers are intervening in DHH students’ language use—either developmentally or through specific remediation—can be seen as a key understanding supporting the future direction of such services. Indeed, there is a distinct lack of information about the language teaching and remediation strategies employed by itinerant teachers in such roles. Such information exists in the literature concerning intervention strategies for hearing students who are learning English as a second language (Hudspath-Niemi & Conroy, 2013), but is strangely absent from the literature for DHH students in mainstream settings. Across these issues, it is also important to
understand the full context of itinerant teaching, including the influences of relevant legislation, systemic and school-level policies, schools, parental desires and demands, and itinerant teacher backgrounds.

In the following chapter, research into itinerant teaching of DHH students will be critically reviewed with the aim of establishing a comprehensive list of activities that are pursued by teachers filling such roles. The literature will also be reviewed to establish a list of potential student needs for intervention in regard to their stays as DHH learners in a mainstream environment. Finally, the review will consider currently available information and evidence about the actual and potential influences on the programs and activities pursued by itinerant teachers in the support of students who are DHH in regular educational environments.
Chapter 2 Literature Review

The introductory chapter raised three issues fundamental to an examination of the extent to which itinerant teacher support activities are related to student needs. First, a critical appraisal of itinerant teacher activities is hindered by the lack of a comprehensive list of the activities, which includes direct teaching, that are typically pursued by such teachers. The literature describing itinerant teacher activities will be the subject of the first section of the review. Second, there is a lack of clarity about the additional learning needs of DHH students that are amenable to intervention by itinerant teachers, particularly in regard to communication ability. The second section of the review will examine the literature for each student learning need, reviewing how each is assessed, the interventions possible by itinerant teachers, and the relationship between the abilities. The third issue was that the wider context of itinerant teaching merits a full examination of all influences on the choice of itinerant teacher activities. These wider influences will be explored in the last section of this chapter. Information from these three areas will allow an examination of the nature of the relationship between itinerant teacher activities and student learning needs. Before beginning the review, however, the principles used to review and evaluate the key literature will be briefly presented.

2.1 Principles for the Literature Review

The literature to be reviewed includes randomised clinical trials, some studies using large-scale longitudinal data, surveys and qualitative studies, and peer-reviewed expert opinion pieces. All of these will be examined for the extent to which they inform current itinerant teacher practices. The application of evidence-based practice (EBP) will be briefly discussed followed by an argument for a modification of EBP. This modification will be proposed as a way to integrate the findings from the varied research literature.
The importance of EBP has been identified in the field of education of DHH students by a number of authors (Luckner et al., 2005/2006; Marschark et al., 2009; Marschark & Spencer, 2010). Eriks-Brophy (2004) wrote of the importance of EBP for auditory-verbal (A-V) therapy and used a classification system for research evidence proposed by Fratalli (1998). There are difficulties, however, in limiting practices to those based on Class I and Class II research as proposed by Fratelli (1998). Both Eriks-Brophy (2004) and Marschark and Spencer (2010) wrote that there was little Class I evidence available because of the ethical difficulties associated with undertaking outcomes research based on randomised clinical trials (RCT) in this context. They suggested that Class II evidence from quasi-experimental research (e.g., program evaluations and cohort studies) should be considered acceptable; keeping in mind the possible lack of generalizability, and the possible influence of other factors in treatment evaluations (Eriks-Brophy, 2004; Marschark & Spencer, 2010). The main difficulties for Class II evidence were the relatively small numbers in any grouping, and the high degree of variability within a group, across a variety of characteristics. Eriks-Brophy (2004) argued that non-experimental (Class III) research should be seen as the least compelling evidence, but nevertheless it is useful for indicating areas for experimental research. Evidence from all three categories will be considered in this review, especially where they contribute to a convergence of results across different settings and study designs.

The first chapter indicated a possible disjunction between researchers and itinerant teachers, and a lack of research linking practice to student outcomes. A way of linking these issues is indicated by a novel approach to EBT by Dollaghan (2007) in the related field of communication disorders. She restated Sackett’s (1996) definition of EBT and later expansion of the term (2000) to include clients’ perspectives. Dollaghan
(2007) wrote about three types of research and coined the acronym E^3BT to indicate that EBP should be based on three perspectives: (a) the best available external experimental research; (b) the best available internal clinical evidence; and (c) the best available evidence from the perspective of the clients (Dollaghan, 2007, p. 2). The latter perspective includes careful observations and professional assessments of the students. This approach has merit for the present review of itinerant teaching and will be used as a way to integrate three perspectives that are analogous to those suggested by Dollaghan (2007). The related areas are: experimental research; rigorous examinations of teaching practices and interventions; and qualitative studies of the opinions and perspectives of students, itinerant teachers, parents, and schools. The latter will also include studies of the abilities of the students being served. Evidence from all three perspectives will be examined with a view to critically examining the relationships between itinerant teacher practice and student abilities.

2.2 Itinerant Teacher Activities

This section will examine descriptions in the literature of the roles and activities of itinerant teachers, focusing on expanding the detail about direct services and the extent of communication teaching. “Language” refers here to the use of a spoken, signed, or alternative communication system. Communication teaching includes assisting with the development of language, which may also involve teaching listening and speech skills. The term “teacher-roles” will also be used because it is commonly used in the literature to describe a collection of activities pursued by teachers. For example, the consultative role is often used to describe activities that include attending planning and review meetings, providing in-service presentations, and informal and formal discussions.
Early descriptions of itinerant teacher activities consisted of practical advice from experienced teachers such as outlined in the following two books. In her book, *The art of itinerant teaching for teachers of the deaf and hard of hearing*, M.D. Smith (1997) described itinerant teaching as consisting of two roles. One role was to provide consultative services, the other to provide direct teaching. There was no attempt, however, to describe how itinerant teachers chose individual component activities of these roles. Another book on itinerant teachers, *The itinerant teacher's handbook* (Bullard, 2003), summarised the views of many itinerant teachers and also cited some research material related to the consultative role. Bullard (2003) used the same role division as Smith (1997), making a distinction between providing direct teaching to students, and providing consultation services to classroom teachers. These two books did not critically examine itinerant teaching, nor did they base their opinions and advice on research such as that available from the research literature as follows.

Yarger and Luckner (1999) used a qualitative analysis of interviews with 10 itinerant teachers from one US state to investigate the perceptions of teachers about their responsibilities, job satisfaction, and effectiveness. The study concluded that the itinerant teachers were highly supportive of the application of both direct teaching and consulting roles. The study also found that the role of the itinerant teacher varied between schools and districts.

Kluwin, Morris, and Clifford (2004) used rapid ethnography with a volunteer sample from two suburban school districts in two adjoining US states to examine the skills necessary to be an effective itinerant teacher. The itinerant teachers were observed and interviewed, and class teachers and school administrators were also interviewed. Some general archival documents were also analysed, including materials given to individual students as well as policies used to assign students to different settings. The
“rapid” aspect of the ethnography referred to the use of prior experience and research literature to formulate the interview questions and observation protocols, rather than using completely open-ended interviews. Qualitative analysis indicated that itinerant teachers needed: (a) practical skills, such as managing work scheduling, resources, and variations in school settings; (b) personal skills such as for maintaining effective relationships and professional credibility; and (c) flexibility in adjusting to the variation in itinerant teacher roles between teaching and consulting. The study found that students with less severe hearing losses generally received mostly consultative support for their classroom teachers. There was little detail, however, about the nature of the teaching activities, or the abilities of the students, and no mention of specific language teaching.

A study by Foster and Cue (2009) used surveys, interviews and observations to provide detail about itinerant activities in order to develop recommendations for pre-service and in-service programs. Itinerant teachers were asked to list up to 10 tasks they commonly used and to rank the first five according to their importance. Online and paper survey forms were distributed across the US with 210 returns. The itinerant teachers were not given a list of possible activities, rather they were asked to use their own words, and the researchers then used qualitative analysis to group the responses into themes.

The responses were highly variable. Only 33% of the teachers indicated that working with students was one of their tasks, but this was the most frequently mentioned task and was mentioned twice as many times as the next highest activity, working with school personnel. Other activities included planning, assessment, and record keeping; coordination of activities such as meetings; working with parents; skill development; and technical activities. Working with students was further subdivided into academic or class work, personal/social language arts, general, and communication.
It would appear that there was little evidence that the itinerant teacher intervened to develop communication skills.

Ranking the importance of the activities produced confusing results in the Foster and Cue (2009) study. The researchers recommended caution when interpreting the rankings because the itinerant teachers reported that they found the ranking difficult and wanted to assign the same rank to a number of activities. The researchers supplemented the rankings by counting the tasks that were first mentioned by the itinerant teachers. This use of the first mentioned task, however, was a questionable strategy for attributing importance to the activities because the itinerant teachers had not been asked to list them in order of importance. Analysis of the ranking and order of listing of activities indicated that the itinerant teachers tended to consider that the most important activities were working with staff and working with students. Teaching communication was rarely mentioned and was not highly ranked.

Another sampling technique used for itinerant teacher research was to survey designated highly competent and experienced itinerant teachers. One such study was by Luckner and Howell (2002), who conducted a qualitative study of “veteran” itinerant teachers in order to provide recommendations for itinerant teacher preparation programs. The itinerant teachers were all female, from the same US state, and were very experienced and highly qualified. The students in the study were all perceived by their itinerant teachers to be successful in the mainstream setting. The itinerant teachers rated consulting as the most important aspect of their work, but when driving time was set aside, the values for their teaching activities indicated that 51% of the time was spent working with students and only 8% consulting. The other itinerant activities listed were planning, attending meetings, testing, and staff development. There was little detail about the direct teaching apart from some references to fostering language development.
through literacy and classwork activities, and providing assistance with hearing technology.

Several other studies have used identical or similar methods to examine the activities undertaken by itinerant teachers. The first of these studies (Luckner & Miller) was undertaken in the US and inspired two replications in the next 19 years. The replications allow comparisons to be made across that time span and across two countries. Luckner and Miller surveyed itinerant teachers across the US about their demographic characteristics and their workloads. The 1994 study was partly replicated in Australia in 2004 (Hyde & Power), and further replicated in the US in 2013 (Luckner & Ayantoye). Over the 19 years covered by these three studies, in the US the average age of the itinerant teachers had increased from 39 to 44; the average years of experience increased from 7 to 17; and there were more teachers who were deaf, 10% in 2013 versus 5% in 1994.

There were three measures relating to the itinerant teacher activities in these three surveys. First, the itinerant teachers were asked to estimate the amount of time used per week on predetermined categories of activities: direct teaching services, consultations, assessment (of any nature), driving, and adjusting materials. They were next asked to rate the activities in order of importance, and a further set of questions about a sample student required them to list the primary individual educational plan (IEP) goals for their fourth-listed student.

The estimates of time per week for each activity in the three studies indicated that direct services received more than twice the amount of time as consultations. Hyde and Power (2004), for example, reported that direct services were provided by 82% of the teachers for more than six hours per week compared with 8% for consultation services. The lack of sub-categories in all three studies meant that there was no detail
about the direct services, so it was not possible to discern what student needs were being addressed during this relatively large proportion of time. The itinerant teachers in the US studies ranked direct services as most important, with consultations with other professionals and parents second, and lower rankings for staffing presentations (in-services in Australia), monitoring, assessment, adjusting materials, and providing formal staff development activities.

The issue of using a withdrawal (pull-out) method for the direct services figured highly in the discussion in all three studies. Most of the direct services were provided using withdrawal with values of 71% for both US studies and 56% in Australia. Hyde and Power (2004), in reviewing the results of their study and those of Luckner and Miller (2004), suggested that the high values for direct instruction and pull-out teaching ran “counter to generally accepted practices associated with inclusion policies” (Power & Hyde, 2003, p. 398). In contrast, there was no evidence in the study that the itinerant teachers, mainstream teachers, or parents disagreed with the amount of withdrawal time or about the balance between direct teaching services and consultation activities. The authors of the most recent study (Luckner & Ayantoyne, 2013), however, were less critical of withdrawal and direct teaching. They recommended that itinerant teacher preparation programs should prepare professionals to provide direct teaching and that research should examine whether direct teaching should be provided in a withdrawal setting.

The large variation among the numbers of students on itinerant teacher caseloads illustrated the difficulties of survey research conducted using a national sample. Each survey included a variety of states and hence a variety of educational administration requirements. In the Power and Hyde (2003) study, 61% of the itinerant teachers in the state of Queensland had more than 40 students on their caseloads, while none of the
New South Wales (NSW) itinerant teachers had more than 20. The US itinerant teachers had an average of 23 in 2013, with high standard deviations. These large differences suggest quite different support models, and make further comparisons of teaching activities problematic.

The locations of the three studies also varied, from urban to regional cities, suburban and rural settings, and isolated schools. As Luckner and Ayantoyne (2013, p. 416) noted, it is reasonable to expect that the responsibilities of a single itinerant teacher in an isolated setting would vary from those of a team of itinerant teachers in a city. These regional variations present difficulties when interpreting averages to make generalizations about the roles of itinerant teachers. Other studies also indicated the influence of geography on itinerant activities (Checker et al., 2009; Kluwin, Stewart, & Sammons, 1994; Luckner & Miller, 1993).

The three studies used an identical sampling method to provide student information. They asked for details about the fourth listed student on the itinerant teachers’ caseloads and used the results as being representative of the student population. The results indicated that there were some differences between the studies related to the increased use of cochlear implants over the years, and due to the higher proportion of the Australian students with profound hearing losses. There was a wide range of hearing losses in all studies but there was limited information about the language abilities of the students. Over 30% of the US students and 26% of the Australian students had other disabilities. The Australian study showed that two-thirds of the students were academically competitive, but 17% were unable to meet minimal academic standards even though they were mainstreamed. These variations in the abilities of the students in all three studies illustrated again the difficulties of making generalisations about the responsibilities of itinerant teachers.
A similar study of itinerant teachers was conducted by Alturki (2002) for the whole of Texas, and thus had the advantage of using a complete educational system, albeit divided into five regions. The 87% response rate provided a comprehensive sample with teacher demographics that were comparable to the other three studies. The data on itinerant teacher activities, however, were reported only in the following manner: 99% of itinerant teachers worked with other professionals in the school and community, 98% provided direct teaching to the students. This is another way of measuring itinerant teacher activities; that is, identifying whether particular activities are used at all (i.e., at least once). However, this method does not allow for either: (a) an indication of the proportion of time devoted to those activities; or (b) an examination of the association between the activities of the itinerant teachers and the needs of the students.

Antia, Kreimeyer, and Reed (2010) reported on the percentages of specific services provided by itinerant teachers to 197 students in a longitudinal study they conducted examining the academic and social progress of DHH students in mainstream classrooms (Antia et al., 2008). The data for the delivery of direct services were averaged over four years and indicated that 59% of the 197 students received direct instruction related to self-advocacy, followed by reading (46%), writing (43%), study skills (38%), and language (37%). These student-level data were not available from most other surveys of itinerant teacher practices and raise the question as to why all students were not receiving all possible services. This is different from asking why all itinerant teachers were not providing the same services; a question that invites answers relating to the ability, inclination, and preparation of the teachers. Student-level data invite answers related to the particular characteristics of the student. In the Antia et al. (2008) study, the researchers examined the influence of student characteristics by
2.2 Itinerant Teacher Activities

examining the cases of 25 of the 197 students in depth. The result was a model termed “a continuum of support services”, which provided a hierarchical listing of the support services, graded according to weekly support hours provided to the student. This model will be presented in more detail later (see Section 2.3.3.1).

2.2.1 A list of teacher activities.

To this point, the currently available literature has reported on surveys of the activities of itinerant teachers (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994); results from mixed methods studies (Antia, Jones, Reed, & Kreimeyer, 2009; Foster & Cue, 2009); and qualitative studies (Clifford, 2008; Guteng, 2005; Kluwin, Morris, & Clifford, 2004). In addition, other published accounts of the roles undertaken by itinerant teachers have been considered (Bullard, 2003; M. D. Smith, 1997). As a result of the review of the literature undertaken for this thesis, it is possible to summarize all the activities that were found to be pursued by itinerant teachers across all of these studies. The following list of 33 activities is organised according to three categories of the activities often used in the studies, and as defined by Bullard (2003) and Antia and Jones (2010): consultative services, direct non-academic services, and direct academic services. For ease of presentation, nine sub-categories are also provided using terminology available in the studies.

The consultative services include: (a) case management activities such as conducting student assessments and providing progress reports, and working with parents; (b) consultation activities including consulting with the class teacher, and assisting the school with accommodations and adjustments such as helping to improve classroom acoustics, and supporting the school with assistive listening devices; and (c) more formal consultation activities involving assisting with IEPs, conducting in-services, and attending review meetings.
The direct non-academic services that are delivered to the student include: (a) informal checking in and conversation; (b) formal teaching in the specialised communication areas of auditory skills, speech, and language; (c) teaching the use of assistive devices, and teaching deaf studies; and (d) assisting with aspects of personal and social development including social skills, self-determination, self-advocacy, career development, and behavioural and emotional support.

Direct academic services include: (a) direct teaching of academic subjects including language arts (reading and writing), maths, science and social science, and other curriculum subjects; and (b) general school support such as pre- and post-teaching of subject content, tutoring with assignments and homework, and teaching study skills.

Three other activities that were not listed above but were often mentioned were driving, assessment, and preparation of materials. Driving time was found to be a function of geography (Hyde & Power, 2004b; Luckner & Ayantoye, 2013). Both assessment and preparation of materials were related to specific subject or skill areas, such as reading or speech, but were not listed as separate activities by some researchers (Antia et al., 2010).

2.2.2 Comparing teacher activities.

It was difficult to use the preceding list of teacher activities as a basis for comparing how the activities were employed in different studies because of: (a) sampling limitations; (b) methodological issues; and (c) measurement issues. A number of surveys sampled itinerant teachers across varied geographic and educational regions. (Luckner & Ayantoye, 2013; Luckner & Miller, 1994; Power & Hyde, 2003). Other studies had smaller and more homogenous samples but had limited generalizability (Cameron, 2005; Carson, 2001; Luckner & Muir, 2001; Rabinsky, 2013; Yarger & Luckner, 1999).
The methodology used to examine the activities varied. Some studies used open-ended qualitative approaches and were able to use the words of the itinerant teachers to describe some activities in detail (Foster & Cue, 2009). Other studies used surveys with limited choices of activities and greater emphasis on consultancy roles (Luckner & Ayantoye, 2013; Luckner & Miller, 1994; Power & Hyde, 2003) and focused on the working conditions of the itinerant teachers (Luckner & Hanks, 2003).

There were three alternative measures of the use of particular itinerant teacher activities: (a) the proportion of itinerant teacher time used per week with an activity (e.g., Luckner and Ayantoye, 2013); (b) the percentage of students receiving different levels of support time for each activity (e.g., Hyde and Power, 2004); and (c) the percentage of students receiving the particular activity at some time in the year (e.g., Alturki, 2002). This variation in the type of measures used made comparisons between studies difficult and the use of averages did not allow an examination of the reasons for the choice of different activities for different students. Ratings of importance were also used but the results suggested that the itinerant teachers found ratings difficult and tended to rate most activities as important (Foster & Cue, 2009; Luckner & Ayantoye, 2013).

In spite of the preceding difficulties, a comparison of the literature reviewed to this point has identified a wide range of activities that itinerant teachers employ, with much variation being revealed in regard to individual educational jurisdictions. Different terminology is used in different locations, but there was a consistent distinction between direct teaching services—both academic and non-academic—and consultation services. Most studies demonstrated that itinerant teachers were providing a core set of consultation activities, but there was little detail about the composition of the direct teaching services or the relationship of the direct teaching activities to the IEP.
goals (Luckner & Ayantoye, 2013; Luckner & Miller, 1994; Power & Hyde, 2003). The question of Antia et al. (2010) about how itinerant teachers choose which services to provide was unable to be answered by the literature examined up to this point. The next section of the review will consider research that details and examines itinerant teaching from the perspective of the students and the specific learning needs that DHH students in mainstream environments present.

2.3 Student Influences

Section 2.2 considered the variety of activities used by itinerant teachers. The majority of studies reviewed provided data on the activities of the teachers rather than data on the assistance provided to the students and their needs level, as discussed by Antia et al. (2010). As a consequence, even though student demographics were available to some extent in all the studies, there was an absence of consideration about how the teacher activities were related to student variables, which includes student demographics and data on student needs. This section will examine descriptors of DHH students as identified in the literature—particularly examining whether these descriptions suggest the need for specific additional intervention (e.g., by specialist teachers of the deaf). Specifically, this section will examine literature that considers the extent of the learning needs, the possibilities for habilitation, and the potential link between the identified student learning need and itinerant activities. It will also examine literature about the influence of student variables such as grade level and level of hearing loss that are not amenable to habilitation but may influence the choice of support activities. The next section (2.4) will consider other possible influences on itinerant teachers’ choices of support activities, including those related to legislation, school and school system policies, and the backgrounds of itinerant teachers themselves.
2.3 Student Influences

2.3.1 Student needs.

A starting point for considering student learning needs is an examination of the IEP goals of sample students listed by itinerant teachers in the three similar studies reviewed in Section 2.2 (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994). All three studies reported these results as the primary IEP goals of the students—effectively a rating of how the itinerant teacher and others perceived the importance of the listed student needs. There is some uncertainty, however, about this interpretation, because the original question, as included in the appendix of the most recent study, reads as follows: “Please identify the primary areas (IEP goals) that you work [sic] with this student” (Luckner & Ayantoye, 2013, p. 423). Itinerant teachers may have interpreted the question as relating to their teaching activities rather than to reported IEP goals. The three studies, however, reported the results as referring to only “the IEP goals developed for the student” (Luckner & Miller, 1994, p. 113) and not to teacher activities, and so that is the interpretation of this thesis. The results of the three studies are summarized in Table 2.3.1.

2.3.1.1 DHH students’ language needs.

It is apparent from Table 2.3.1 that language needs figure prominently in the IEP objectives set for DHH students in regular classrooms. It is also apparent that there is a relatively low proportion of time reported as being devoted to language teaching by itinerant teachers (Foster & Cue, 2009; Hyde & Power, 2004b; Luckner & Ayantoye, 2013).
Table 2.3.1

<table>
<thead>
<tr>
<th>Goal</th>
<th>1994\textsuperscript{a}</th>
<th>2004\textsuperscript{b}</th>
<th>2013\textsuperscript{c}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td>80</td>
<td>85</td>
<td>74</td>
</tr>
<tr>
<td>Reading</td>
<td>61</td>
<td>59</td>
<td>63</td>
</tr>
<tr>
<td>Written language</td>
<td>55</td>
<td>67</td>
<td>56</td>
</tr>
<tr>
<td>Auditory training</td>
<td>54</td>
<td>28</td>
<td>53</td>
</tr>
<tr>
<td>Speech remediation</td>
<td>21</td>
<td>55</td>
<td>16</td>
</tr>
<tr>
<td>Speech reading</td>
<td>28</td>
<td>31</td>
<td>16</td>
</tr>
<tr>
<td>Maths</td>
<td>21</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td>Social skills</td>
<td>27</td>
<td>41</td>
<td>25</td>
</tr>
<tr>
<td>Living skills</td>
<td>9</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Deaf awareness</td>
<td>21</td>
<td>21</td>
<td>26</td>
</tr>
</tbody>
</table>

\textit{Note.} All numbers are percentages. \textsuperscript{a}Percentages from Luckner and Miller (1994). \textsuperscript{b}Percentages from Power and Hyde (2003). \textsuperscript{c}Percentages from Luckner and Ayantoye (2013).

Given these apparently contradictory findings in the literature, this section considers the literature relating to: (a) the language needs of DHH students in mainstream settings; (b) whether there is evidence for the efficacy of language teaching for DHH students in mainstream settings, either by itinerant teachers or other personnel; and (c) the types of language teaching activities that can be effectively employed. It should be noted here that teaching language refers to developing spoken or signed language and not to teaching literacy skills or the other language arts.

\textit{Language needs in mainstream settings.}

The prevalence of language goals in the IEPs of DHH students (see Table 2.3.1) is in agreement with evidence for there being significant delays in the development of language skills by DHH students beginning school (Boons et al., 2013b; Ching et al., 2013; Luckner, Slika, & Johnson, 2012; Marschark & Spencer, 2010; Mayer, 2007). As Marschark and Spencer (2010) stated:

although early identification and intervention are known to be able to lessen those delays, they still do not provide a “level
playing field” as most children with hearing loss have continued to reach pre-school age with significant language delays (p. 50).

One reason for language delays, that may still be present during school years, is that the benefits of early intervention depend to some extent on parental cooperation and healthy family dynamics, which may vary considerably within families (Henry, Sloane, & Black-Pond, 2007; Pan, Rowe, Singer, & Snow, 2005; Windsor, Glaze, & Koga, 2007). As Hoff (2006) has demonstrated, it is reasonable to expect a wide variation in the ability of the caregivers to effectively facilitate the language development of their children, even with early intervention. Other influences that restrict language learning include being a second language learner (Carson, 2001), and the presence of disabilities such as cognitive impairments (Holt & Kirk, 2005), and autism (Wiley & Moeller, 2007). These influences may still be present among DHH students once they begin school, with consequent implications for further language development during the school years.

Even DHH students with mild and moderate losses can have language delays requiring specialist assistance (Bess et al., 1998; Most, 2004). A study by Most (2004) of 47 school students, using the Screening Instrument For Targeting Educational Risk (SIFTER) questionnaire (Anderson, 1989), showed that students with minimal, unilateral, and mild hearing losses are at risk for educational performance due to communication difficulties resulting from their hearing losses, and showed that specialised support services should be considered for these students.

Those DHH students who begin school without language delays also have language needs. This is because there is evidence that they need assistance to maintain their language levels. This was illustrated by a study of 16 academically successful students who began school with age appropriate language and consistent parental
support. These 16 students still indicated that they requested support from itinerant teachers throughout their schooling in order to maintain their language levels relative to their hearing peers (Eriks-Brophy et al., 2006). The evidence suggests that the continuing need for language support is partly because noisy classroom environments (Dockrell & Shield, 2006) compromise interactions both with the class teacher and with hearing peers. The compromised interactions in turn limit the normal gains expected in language complexity and vocabulary throughout school (Nippold, 2007). McKellin, Shahin, Hodgson, Jamieson and Pichora-Fuller (2011) showed that classroom noise not only restricts the amount of incidental language learning but also restricts the linguistic complexity of class discussions, a topic to be discussed further in Section 2.4.4.3.

DHH students who use signing still have to develop their sign language skills (Allen & Enns, 2013) in addition to learning English. Their language skills have benefited from a greater acceptance of signing (Moores, 2006; Paterson, 1996) and from improvements in teaching methods and in the assessment of sign language development (Allen & Enns). Nonetheless, signing students are still less likely to be in mainstream settings (Allen & Anderson, 2010). Most studies of itinerant teachers have evidence that some DHH students who use signing are present in mainstream settings but there is an absence of detail about their language abilities and educational outcomes, partly due to the difficulties in assessing signed language (Allen & Enns, 2013). Some studies indicated that itinerant teachers provide some “in-class” interpreting for their students who sign (Alturki, 2002), and others indicated that itinerant teachers teach sign language as well as interpret (Foster & Cue, 2009). Overall, however, there is little evidence concerning sign language learning needs of DHH students in mainstream settings and the subsequent teaching activities of itinerant teachers.
DHH students who use cochlear implants have been extensively studied. These studies have consistently reported that, although an increasing proportion of these students have language skills within the normal range, on average their language levels are still significantly below those of hearing students (Boons et al., 2013a; Connor, Craig, Raudenbush, Heavner, & Zwolan, 2006; Dillon, de Jong, & Pisoni, 2012; Duchesne, Sutton, & Bergeron, 2009; Fagan & Pisoni, 2010; Geers et al., 2008). Most of these studies have, however, demonstrated the possibility of improvements. Geers, Tobey, Moog and Brennan (2008) conducted a survey of 85 North American adolescent students who had been surveyed seven years prior, and were assessed again to examine possible factors that predicted improved abilities. Even though language levels improved at a faster than normal rate, reading levels were still not age appropriate in high school.

A Malaysian study (Mukari, Ling, & Ghani, 2007) examined the educational performance of 20 cochlear implant recipients in mainstream classes and in segregated schools. The students were aged 5–12 years and the average age at implant was four years. All students except two had normal IQ scores, and their speech perception and speech comprehension scores varied widely. Their examination results and educational performance, as measured using SIFTER (Anderson, 1989), were compared with hearing peers and indicated that educationally, only 12% of the students were not at risk, even though 25% performed above average. The students’ mathematics scores were higher than the language scores, and their overall communication scores were the lowest. The authors concluded that language deficits were the main educational challenge for these students. Even though these students represent the first generation of students implanted and studied in Malaysia, their educational and communication performances are not dissimilar to some of the DHH students served by itinerant
teachers in other locations. It would appear that DHH students continue to have language delays because they are late arrivals to consistent, reliable language models (Cameron, 2005), in spite of early intervention.

Another area of language development and use by DHH students that has been extensively covered in the literature is vocabulary development. Lucker and Cooke (2010) conducted an extensive review of this literature and stated that “students who are deaf or hard of hearing are delayed in their acquisition of vocabulary knowledge, have smaller lexicons, acquire new words at slower rates, and have a narrower range of contexts that result in word learning” (2010, p. 40). They further concluded that vocabulary delay is a major contributing factor to delays in literacy development, with consequent delays in other subject areas. As Marschark and Spencer (2010) concluded, vocabulary delay is both a result of the underlying language delay, and a hindrance for further language development. In summary, there is overwhelming evidence that DHH students, with the full range of hearing losses, have significant language delays.

*The efficacy of language teaching.*

The efficacy of language intervention has been demonstrated for DHH children prior to school by many studies of early diagnosis and intervention (Blamey et al., 2001; Calderon, 1998; Gordon, Papsin, & Harrison, 2002; Moeller, 2000; Nicholas & Geers, 2006; Svirsky et al., 2002; Yoshinaga-Itano et al., 1998). These studies found that the language advantage in favour of earlier intervention was evident across the other variables of age, gender, socioeconomic status, ethnicity, cognitive status, degree of hearing loss, mode of communication, and presence of other disabilities. The question at issue in this subsection is whether the benefits that accrue from specific language intervention in the first five years can continue to occur during school years, and in school settings, as a result of school-based input.
Blamey et al. (2001) conducted a three-year longitudinal study of the speech perception and language skills of 87 primary students in Australia who used hearing aids and cochlear implants. The authors concluded that appropriate amplification was not sufficient in itself to facilitate normal language development. They further concluded that the provision of substantial amounts of direct language and speech instruction under good listening conditions would substantially improve their speech and language skills (Blamey et al., 2001, p. 282). This conclusion applied to students with moderate to severe hearing losses as well as those students with cochlear implants. The authors classified these students as having intermediate hearing losses because the effect of the implant at that time was to provide these students with functional hearing approximately equivalent to someone with a severe hearing loss (see Boothroyd & Boothroyd-Turner, 2002; Stacey et al., 2006).

Other relevant evidence demonstrating that language growth can occur following intervention is available from research with children with profound and severe hearing losses who use cochlear implants (Connor et al., 2006; Geers et al., 2002; Moeller, 2000; Moog & Geers, 2003). Connor et al. (2006) examined 100 profoundly deaf children who had received cochlear implants between the ages of 12 months and 10 years and compared outcomes according to the age of implantation. A range of speech and language assessments was administered, both before and after implantation, and they were followed up every six months for two years, and thereafter annually. Data were analysed using hierarchical linear modelling to provide latent-growth curves for speech and vocabulary for each of the four groups. The results showed that language and speech growth did occur, possibly at a similar rate to hearing children, provided that appropriate amplification began early. When data for the children implanted after the age of seven were examined, however, they showed an
absence of an initial growth burst and diminished speech and vocabulary growth, when compared with those children implanted earlier. This fits with neurological studies using cortical auditory-evoked response waveforms, which demonstrated substantial differences in central auditory system activity if the children were implanted after age seven (Sharma, Spahr, Dormian, & Todd, 2002). This neurological research and the Connor (2006) research do not, however, suggest that linguistic growth is not possible after the age of seven. Even though it highlighted the importance of early access to both appropriate amplification and to a rich linguistic environment, it also allowed for the possibility that sustained language growth is possible during the school years, given appropriate language facilitation strategies, especially in the first few years of schooling.

Moog and Geers (2003) examined the speech, language, and reading scores of 181 prelingually deafened DHH children aged 8–9 years, with no additional handicaps, in geographically and educationally diverse situations, who had received a cochlear implant at or before their fifth birthday. The overall scores in all areas measured were very positive, with over half of the students reading at age appropriate levels. Self-concept and social adjustment scores were also high and the authors concluded that:

As technology improves and teaching capitalizes on the improved technology, we anticipate that deaf individuals will demonstrate increased spoken language competence, higher reading achievement, and improved social interactions, leading to better job opportunities and improved quality of life. (Moog & Greers, 2003, p. 124S).

This summary is very similar to the conclusions of Summerfield and Marshall (1999), that there is a cascade of benefits from intervention in language skill development and use (see Section 2.3.3.2). It must be noted that the students in the Moog and Geers (2003) study were in their third and fourth year of schooling and their
age appropriate results are further evidence of the possibilities for language and speech growth for a child beginning school with language needs.

The previously mentioned study by Mukari et al. (2007) of cochlear implant recipients in Malaysia concluded that the lateness of the implant was the major contributing factor for their language delay, even though all had received two years of intensive auditory and speech training post implantation by the cochlear implant team. They also suggested that the lack of support services at school adversely affected their capability to perform well in mainstream settings.

The main limitation for all of the above research is the lack of specific details of the language interventions for DHH students in mainstream settings provided by itinerant teachers or other personnel such as classroom teachers, teacher’s assistants, or speech therapists. This is surprising given the predominant presence of itinerant teachers for most DHH students, and the earlier evidence of the prevalence of language delays.

Types of language teaching activities.

Some researchers in the area of language development of DHH students have consistently argued that successful language interventions must be based on the findings of research into the factors that optimise language development with hearing children (P. M. Brown, Bakar, Rikards, & Griffin, 2006; Kretschmer, 1997). A brief review of these findings will therefore indicate the possible strategies used by itinerant teachers to assist with language development of their students.

The literature regarding normal language development has demonstrated that early intervention seeks to optimise is the quality of caregiver input because it has a significant effect on the language development of children (Chapman, 2000; Hirsh-Pasek & Burchinal, 2006; Hoff, 2006). The theoretical basis for this influence of
caregiver interactions on the development of language ability includes the notions of Vygotsky (1978) that social interactions are most important for learning; and Bruner’s (1977) description of scaffolding, as the way in which the caregivers support emerging language complexity by their questions and responses. A later theoretical addition was that of the “fine-tuning” hypothesis of Snow (1989), which describes the way in which parents consistently adjust their language to the child’s constantly developing receptive and expressive skills. The positive influence of adult interactions using these principles has also been demonstrated with DHH children (DesJardin & Eisenberg, 2007; Harrigan & Nikolopoulos, 2002) and cannot be expected to cease once a child starts school. Two aspects of adult interactions are of interest: the number of interactions has been found to be more important than the number of words to which a child is exposed (VanDam, Ambrose, & Moeller, 2012); and reduced adult interactions have been found to have effects on a range of cognitive and social skills including belief understanding, memory span, picture sequencing, inhibition, and mental state language (Macaulay & Ford, 2013).

Itinerant teachers may be influenced in two ways by research from early intervention. First, they may use the principles of natural language development to guide their language teaching activities with school students, as suggested by Cameron (2005) and Kretschermer (1997). An examination of language teaching by itinerant teachers may therefore benefit from examining the extent and quality of the conversational interactions provided. Second, itinerant teachers may use a type of family support model with school students, and combine their own teaching activities with activities to support the parents to develop language within the home environments (Eriks-Brophy et al., 2007; Wu & Brown, 2004). It would be important therefore to
examine the nature of the relationship between itinerant teachers and parents, specifically concerned with language development.

Cameron (2005) suggested that the interactional style of the class teacher or teacher’s assistant may benefit the language development of DHH students, but there is no evidence that consultations with an itinerant teacher can impart sufficient skills to a class teacher that would lead to the DHH student making normal progress in language development. There is certainly evidence that itinerant teachers can sensitise class teachers to the needs of DHH students (Eriks-Brophy et al., 2006), but there is no evidence that this occurs routinely or that it would be sufficient to habilitate a significant language delay.

What is being considered here is a language facilitation role for the itinerant teacher in which they guide and coach class teachers to assist the DHH student with language development. Many authors have recommended this strategy (Luckner & Ayantoye, 2013; Luckner & Miller, 1994; Luckner et al., 2012; P. E. Spencer & Marschark, 2010) but there is no evidence that it is effective by itself. In contrast, Marschark and Hauser (2012) reported evidence that classroom teachers continually overestimate the language capabilities of the DHH students and have difficulty effectively teaching them even subject content. There is evidence that class teachers in the mainstream setting often assume that DHH students are hearing more and understanding more than is actually happening (Marschark & Spencer, 2010, p. 157), and in contrast, teachers of the deaf have been shown to be highly skilled in this area (Marschark & Hauser, 2012). There is also evidence that misunderstandings can be compounded by the DHH students themselves also overestimating what they are understanding, and failing to pick up on the misunderstandings in interactions, even interactions in optimal one-to-one situations (Marschark et al., 2004). In class situations
or group discussions they may not be aware that they have misunderstood. This may be because they know that they have not understood, but have learnt to accept that they cannot fully understand such communications (Napier & Barker, 2004). It is thus possible that itinerant teachers may be experiencing and reacting to both situations when they choose strategies to work with their students.

Another type of language teaching is that of direct teaching of language in withdrawal settings, but as previously discussed, studies of itinerant teaching have generally not separated language teaching from other direct teaching activities. An exception is the study by Foster and Cue (2009), who asked itinerant teachers to list the tasks they most often provided, and less than 5% of the itinerant teachers were providing language teaching. Some indirect evidence is also available from a study by Archbold and O’Donoghue (2007) in the UK which investigated practical support measures in local settings for DHH students with cochlear implants. This was a follow up to a large UK study of students with cochlear implants (Stacey et al., 2006).

Archbold and O’Donoghue (2007) suggested that clinical and parent-based habilitation after implantation should continue when the child starts school, using the resources available in the mainstream school. This habilitation would therefore include the itinerant teacher. They emphasized that habilitation takes years, not months, and that it is essential to find ways to enable this process to continue. They further suggested that habilitation should be based around maximizing language outcomes for the students and that providing this in schools would necessitate a thorough revision of school support goals and structures in light of the current therapeutic advances. These findings implied that there is a need for a direct teaching role for the itinerant teacher, in addition to a consultative role.
Another type of language teaching is that of integrating auditory skills training, speech teaching, and language teaching, as suggested by the A-V approach. This will be fully discussed in the auditory skill section, but there is evidence for a connection between speech perception and production scores, and language competence (Blamey et al., 2001; Mukari et al., 2007), which indicated that language teaching would benefit from being integrated with speech teaching using listening.

There is limited evidence about the extent to which language habilitation for DHH students requires explicit therapy, in addition to providing better amplification. Many studies with school-age cochlear implant recipients who demonstrated growth in language skills reported that intensive language habilitation services were provided, but there is no evidence to show that these services were a significant influence in subsequent language development. In a study of four children with a later developed sensorineural mild to moderate hearing loss (Moeller et al., 2010), three of the four caught up to their hearing peers in language simply by being appropriately fitted with hearing aids, although all four retained some phonetic difficulties. The limitations of this study were that all four had early access to hearing aids; they had only mild or moderate hearing losses; and the study only related to pre-school years when the available linguistic environments would possibly be richer and more audible than at school. This study illustrates the necessity of improving the acoustic input for language development, but not the sufficiency.

One aspect of language teaching is teaching vocabulary. Luckner and Cooke (2010) reviewed 41 years of research into vocabulary and DHH students and found 41 relevant peer-reviewed studies. Of those, only 10 included an intervention and none reported effect sizes or strengths of the relationships observed. Luckner and Cooke (2010) concluded that providing a large amount of high quality conversation was
important for vocabulary development. “Conversations provide an avenue for words to be repeated multiple times in context and for new and interesting words to be presented, a process that is difficult to replicate through the use of a structured language program” (p. 60). The implication here is that itinerant teachers could use conversation to develop vocabulary, either conversing directly with the students or facilitating others to do so. Other studies in the Luckner and Cooke review found a two-way relationship between vocabulary knowledge and reading comprehension, as consistently found in general literacy research. This underscored the importance of vocabulary for most subject areas and the authors recommended attention to subject-specific words, possibly using semantic maps and graphic organisers.

Luckner and Cooke (2010) also reviewed studies that demonstrated that vocabulary can improve through reading, but only when the students can read at least 90–95% of the words fluently and have passed from the stage of learning to read to reading to learn. They argued that itinerant teacher activities that were directed to achieving this milestone could thus be regarded as being of critical importance both for language and literacy development. Their suggestions for further research in this area included systematically evaluating different approaches, examining programs that have been found to be effective with other student populations, and examining programs with explicit instruction lessons and explicit strategies for learning unfamiliar words.

A limitation of the review conducted by Luckner and Cooke (2010) was that little of it was specifically related to itinerant teachers. Research into itinerant teacher roles and teaching practices also rarely mentions vocabulary. In early writings by Luckner about preparing itinerant teachers, vocabulary development was not explicitly mentioned (Luckner & Howell, 2002), although the later article (Luckner & Cooke, 2010) promoted the benefit of pre-teaching subject vocabulary. It must be kept in mind,
however, that vocabulary may appear to be overlooked because it may be considered part of reading, language arts, pre-teaching (Powers, 2002), or support for other subjects. In spite of this caution, this limited attention indicates a definite gap in the research literature given the critical importance of vocabulary, and because the majority of DHH students receive support from itinerant teachers. Even though useful research with DHH students in segregated settings may point towards effective strategies to assist DHH students with vocabulary development, it is a large step from the segregated settings to an itinerant teacher using these strategies, either by direct teaching or by assisting and relying on classroom teachers to do this. Clearly the role of itinerant teachers in assisting DHH students with vocabulary acquisition and understanding requires further investigation.

To summarize the research about the language learning needs, there is evidence that many DHH students begin school with language delays, even those with mild to moderate hearing losses, due in part to less than optimal early language input. Even those students with age appropriate language growth at school entry point require support to maintain their language development. During school years, language growth can occur with the provision of appropriate amplification and intervention that uses a combination of intensive language teaching, high quality conversational interaction, and exposure to language-rich interactions in the mainstream school environment.

2.3.1.2 Reading.

Wolk and Allen (1984) reported on a comprehensive five-year longitudinal study, from 1974 to 1979, of the reading achievements of 1664 students across the US. They concluded that average reading abilities showed little change in the five-year period and that individual students improved at one-third the rate of hearing students, reaching a plateau at the fourth grade level. Notably, the participants in their study were
mostly those who were in segregated programs for those five years. A similar plateau effect has been reported in more recent studies by other authors (Luetke-Stahlman & Nielsen, 2003; Moores, 2006). These results have been largely unchallenged in the literature except to note that the studies concerned may not be inclusive of a significant proportion of DHH children in mainstream education (Mitchell, 2004; Reed, Antia, & Kreimeyer, 2008). Recent research, however, has used data from state-wide literacy testing. This data provided specific information about students with hearing impairment within mainstream schools. The results indicated higher levels of reading outcomes for DHH students, leading to the suggestion that the plateau effect of literacy outcomes is not as evident in at least some locations in the US (Easterbrooks & Beal-Alvarez, 2012).

Luetke-Stahlman and Neilsen (2006) reported on a study to identify the predictors of reading ability among DHH students. They pointed out that the commonly identified low reading levels in this group have persisted even though there have been significant improvements in the quality of hearing aids, higher levels of school support, and improved educational techniques. Their study involved a total of 31 DHH students aged 10–18 years with profound hearing losses. A third of the students was in mainstream settings and were supported by itinerant teachers, and the remaining two-thirds were equally divided between day and residential deaf school settings. Their analysis indicated that there were no significant differences in reading outcomes associated with educational placement. The study also provided support for the importance of exposure to correct English in developing English language skills and phonics skills.

Moores and Martin (2006) also noted that the reading levels of DHH students have changed little despite the use of combinations of different modes of communication, methods of instruction, and educational placement options over the last
50 years. These low reading levels continue to be a constant barrier to subsequent academic achievement because they limit the access of students to the academic content delivered through print and classroom teacher instruction.

The type of reading instruction strategies used by teachers of the deaf was examined by Luckner and Handley (2008) in their comprehensive review of research concerning reading comprehension strategies used with DHH students since 1963. They identified 52 studies for critical review with a view to determining EBPs for current use and also to act as a guide for future research. They concluded that itinerant teachers are using strategies to teach reading that are similar to those used in EBP for hearing students, but they recommended that additional attention be given to phonemic awareness and phonics instruction. These strategies have been demonstrated to be a critical feature in reading instruction for students at risk of failing (Trezek & Wang, 2006), and the authors suggested that perhaps they have not been well used for DHH students and that more research is needed into whether the use of these strategies will make a difference to reading comprehension.

In a follow-up study to research by Moog and Geers (2003), Geers et al. (2008) showed the importance of additional reading teaching for DHH students. The earlier study showed that the students began school with age appropriate language and had reading results that were significantly different from the low level results reported earlier for the majority of DHH students. However, the later study showed that when this cohort moved into high school, although their reading skills had increased, they had not kept pace with the reading progress of their hearing peers. Their reading skills showed an overall decrease in standard scores and were below grade level (Geers et al., 2008).
Dickinson, Golinkoff, and Hirsh-Pasek (2010) reviewed the evidence from the US National Reading Panel (2008) on interventions to improve literacy skills in all children. They concluded from their review of the literature on reading interventions that, even though there were large to moderate effect sizes for teaching code-related skills, improving oral language ability had the most significant effect. They concluded that improvements in language led to long-lasting literacy improvements, and also had a range of indirect effects on the code-related skills. Improvements in language skills had an even greater influence in later school years because using code-related skills to comprehend advanced texts requires advanced language skills. Dickinson, Golinkoff, and Hirsh-Pasek (2010) acknowledged the importance of teaching code-related skills, but stressed that:

In contrast, language is an entrenched, slowly acquired, and highly complex ability that includes multiple component skills and is related to semantic knowledge, another slow developing competence that is associated with long-term reading comprehension (p. 307).

They strongly argued that the development of oral language, although complex and difficult, was of vital importance for reading ability, with demonstrated effects from the age of two through the teenage years and into early adulthood. Logically, these considerations apply equally to DHH students, indicating that, for itinerant teachers, language teaching activities may well be fundamental for the ongoing development of reading skills.

In summary, the reading skills of DHH students have been consistently below their hearing peers. Although there is evidence that itinerant teachers do teach reading, even those DHH students who begin school with age appropriate language skills require additional support to make adequate yearly progress in reading skills. There is a strong
indication also that success in the development of reading skills is highly dependent on
the establishment of effective language skills.

2.3.1.3 Writing.

According to Mayer (2007), writing ability parallels reading in being dependent on
language ability. In the context of her examination of ways to facilitate the writing
abilities of DHH students, she noted that, “it can be argued that the first aspect of what
matters in early literacy development is that children have near to age appropriate
spoken and/or signed language fluency in place.” (Mayer, 2007, p. 413).

Similar to reading, the average writing abilities of DHH students at school exit
at age 17 have been estimated to be equal to those of hearing students at age 10
(Albertini & Schley, 2011; Mayer, 2010; Paul, 2008; Strassman & Schirmer, 2013). Antia (2009) suggested, however, that these estimates may not be accurate for
mainstream students supported by itinerant teachers. She further suggested that as with
the reading results, national samples may not include all DHH students in mainstream
settings, who have been shown to have better communication and academic skills on
average than those in more segregated settings.

The writing abilities of DHH students in mainstream settings supported by
itinerant teachers in Arizona were studied by Antia, Reed, and Kreimeyer (2005) by
means of a cross-sectional study of 110 students in public schools. The results showed a
below-average range of scores on a writing test standardised for the hearing population.
Although characteristics such as hearing loss did not predict much of the variance in
writing ability, other factors, including methods of instruction, were more significant.
The authors were not able to conclude that there was significant academic benefit from
the time spent in regular classrooms, because it was unclear whether the students were
in regular classes because they were already academically more capable of achieving in
that environment, or whether the time in the regular class had a positive impact on the students.

In their report, Antia et al. (2005) concluded that little is known about the type of writing instruction given by itinerant teachers because much of the research has been conducted within special schools or special units in mainstream schools. A further study by Antia (2009) used longitudinal data over five years from 197 DHH students, in two US states, who attended regular classes in mainstream schools for at least two hours per day. The results showed that, even though the average writing abilities were below the state averages for hearing students, the DHH students, on average, made a years’ progress in a year. This meant that their writing skills did improve over the five years that they were in mainstream settings.

Strassman and Schirmer (2013) selected and reviewed 16 studies of writing instruction over the last 25 years and concluded that there was a small and fragmented evidence base on writing instruction that could be used to guide practice. One study from this review was by Wolbergs, Dostal, and Bowers (2012) who examined the use of Strategic and Interactive Writing Instruction (SIWI) with 29 DHH middle school students in a residential school setting. The findings for SIWI suggested that DHH students could benefit from explicit instruction in the form of language (i.e., syntax and semantics) that was integrated into the teaching of academic content. This is in line with the suggestions from Powers (2003) that pressure to learn academic content was an important part of the success of mainstreaming.

Returning to the research on itinerant teacher activities that was reviewed and summarized in Table 2.3.1, it is noteworthy that at least 55% of the DHH students surveyed had writing as a primary IEP goal. It is apparent, therefore, that the itinerant teachers in those studies attempted to assist DHH students to develop their writing
skills. What is not clear in those and other studies, however, is the extent of this teaching or the activities used. Specifically, it is not clear whether the itinerant teachers used explicit writing instruction (including the teaching of the underlying language skills), or simply assisted their students with writing to fulfil the requirements of the class curriculum. It is possible that some combination of these teaching activities was used. It would be useful to examine which activities are used, and what influences the selection of those activities.

2.3.1.4 Auditory skills and speech reading.

Auditory skills and speech reading are both skills used to understand spoken language and will be considered together. Speech reading (lip reading) was a primary IEP goal listed in Table 2.3.1 in 1994 and 2004 but not in 2013. The reasons for this change are outside the scope of this review, but they may be due to other student needs discussed in this review. Such student needs include general improvements in auditory skills; improvements in hearing aids and cochlear implants; and the use of auditory habilitation following the principles of A-V therapy (Eriks-Brophy, 2004). Speech reading will not be considered further.

Authors other than those cited in Table 2.3.1 have also listed auditory skills training as one of the teaching activities of itinerant teachers (Alturki, 2002; Bullard, 2003; Foster & Cue, 2009; M. D. Smith, 1997). What is not clear from these studies, however, is the effectiveness of the assessments, strategies, and amount of teaching time related to auditory skills training. Other authors provide programs and materials to teach auditory skills in mainstream settings, including the skills of auditory discrimination, spatial location and auditory memory (Duncan, 2006; Erber, 2011; Romanik, 1990; Tye-Murray, 2009).
Moore (2002) conducted neuroanatomical studies that demonstrated that children go through detectable stages of physiological changes in the auditory system until at least age 12. Moore’s (2002) literature review concluded that the quality of the acoustic input influences those physiological changes, and that measurable changes occur in three stages, the third of which coincides with itinerant teacher involvement during elementary school years. According to Moore (2002), children between the ages of 5 and 12 develop an increased capacity to detect and discriminate speech sounds in the presence of background noise and a degraded speech signal, and this capacity, and earlier developed auditory capacities, can be linked to the acoustic input, indicating a role for auditory skills training.

A fundamental question that underlies the teaching of auditory skills is the extent to which direct, specific training is needed. Will students learn to listen just because they use appropriate amplification devices and experience natural listening demands such as from supportive interactions with adults? Moore, Halliday, and Amitay (2009) made a strong case for the efficacy of explicit auditory training based on their systematic review of the evidence for auditory training in children and adults. The authors concluded that the ability to detect and discriminate attributes of sounds improves with practice. In their review, the issue at stake was not whether auditory training had an effect, but the extent to which it generalises from the specific trained skill to other auditory skills, and to long-lasting improvements in receptive and expressive language skills in normal listening conditions. The authors concluded that the evidence supported generalisation of explicitly trained skills. They also concluded that there was not sufficient evidence to understand the actual training regime needed and the extent to which age, IQ, and other disabilities interact with trainable outcomes.

Other authors (Duncan, 2006; Romanik, 1990; Tye-Murray, 2009; Wright & Zhang,
have concluded that auditory training is effective, and that it is important to assist
the generalization of explicitly taught auditory skills, which has implications for the
activities that itinerant teachers choose. Other authors have highlighted the difficulties
posed by noisy classroom listening conditions that make the natural development of
listening skills highly unlikely (McKellin et al., 2011; Nelson, 2000). These difficulties
could be inferred as evidence that specific auditory skills training should take place in
quiet conditions.

Additional evidence regarding auditory skills teaching comes from research with
children who use cochlear implants. Some of this research refers to the provision of
intensive habilitation, but it does not mention itinerant teachers (see for example Mukari
et al., 2007). An exception is a qualitative study by Miller (2008) on the closure of a
resource room for DHH students. When the students moved into mainstream classes,
the itinerant teachers were required to provide A-V therapy to students with cochlear
implants, similar to the types of services provided by the teachers of the deaf in the
resource room. Other longitudinal studies reported on student outcomes in auditory
skills as measured by speech perception tests but contained little information about
auditory training (Ching et al., 2013). A recent review of research involving children
who use bilateral implants, however, supported the benefits of auditory training, (De
Raeve, Archbold, & Diller, 2013), and concluded that therapy is required in three
locations—in home, school, and in therapy sessions—and should include structured
listening experiences, shared experience conversations, and natural conversations.

There is also research evidence related to specific auditory skills. The
importance of auditory discrimination for spoken language development was illustrated
by a study by Stelmachowicz, Pittman, Hoover, and Lewis (2002), who compared the
ability of 40 hearing students to 36 DHH students with moderate to severe hearing
losses. They were compared according to their ability to detect and discriminate the speech sounds of /s/ and /z/. The hearing students were able to consistently identify the sounds in plural words at age five; the hearing impaired students still demonstrated considerable variety in their abilities at age 13; and the authors concluded that the reduced auditory discrimination skills compromised the ability to imitate and learn new vocabulary, particularly with phonemes that are easily confused.

Further evidence of the significance of auditory discrimination skills for language development was provided by Crandell and Smaldino (2000), who reviewed the considerable evidence of the deleterious effect of typical classroom background noise and reverberation on auditory skills and language. They concluded that DHH students frequently confuse the following: plurals, possessives, auxiliary verbs, and third person markers. They highlighted the difficulty that these confusions presented for the grammatical context and redundant acoustic clues that enable listeners to predict language that is not easily heard or understood.

Auditory discrimination and spatial location skills have also been shown to be important for pragmatic and social skills. A study by Most, Shina-August, and Meilijson (2010) compared the pragmatic skills of 13 young hearing students and matched groups of DHH students with either hearing aids or cochlear implants. They found that the DHH students were delayed in the areas of pragmatic language that were compromised by auditory skills. Most et al. (2010) concluded, in agreement with Tye-Murray (2009), that auditory training would improve the pragmatic aspects of language such as enabling the students to be aware of peer greetings, addressing peers, and overhearing important social information including pragmatic and social markers in conversations. Both Tye-Murry (2009) and Erber (2011) recommended specific attention to auditory memory training because it affects the ability of a child to listen to long sentences and
conversations, and to understand and extract the relevant information. Difficulty with complex sentences can in turn lead to difficulties with social skills that are affected by theory of mind development (Schick, De Villiers, De Villiers, & Hoffmeister, 2007).

Proponents of A-V therapy suggest that even though incidental learning can and does occur, care must be taken to promote listening skills. is a commonly used early intervention approach that guides and coaches the parents to assist DHH children to learn to listen and to make optimum use of restricted sound input (2004). Wu and Brown (2004) found that high expectations by both teachers and parents were linked to language growth. They also found that parents expected that the teachers would use A-V therapy. It is possible that parents who have experienced A-V therapy in early intervention settings would expect itinerant teachers to continue this approach. This approach suggests that as listening skills develop, so speech perception and speech production improves, which thereby enables better receptive and expressive language skills. According to this approach, auditory skills are the foundation skills for DHH students that lead naturally to a range of academic and personal outcomes. This approach has intuitive appeal, especially given ready evidence that children and adults can learn auditory skills by repeated exposure to auditory stimuli (D. R. Moore, Halliday, & Amitay, 2009). It must be noted that A-V therapy was developed for young children prior to school age and it is still being adapted for older students (Duncan, 2006) in mainstream settings. The evidence for the efficacy of A-V therapy has been building, but there are persistent methodological difficulties in designing what Eriks-Brophy (2004) calls Class I evidence due to small sample size, the variety of possible confounding variables, and ethical concerns about randomised clinical trials.

There are a number of programs that provide systematic auditory training instruction for DHH students, such as the Auditory Skills Program (Romanik, 1990),
which is widely used in the ACT. These programs and associated resource materials are commonly used in listening therapy for school students, and the skills-based approach they support has been said to represent a positivist approach to helping students listen (P. M. Brown & Paatsch, 2010). Itinerant teachers who favour A–V therapy may well find that the availability of the *Auditory Skills Program (ASP)* materials influences their choice of activities, a subject that research has yet to examine.

In summary, auditory skills instruction results in measurable physiological and behavioural changes that influence syntactic, semantic, and pragmatic language development. DHH students’ IEPs contain requests for auditory skills teaching, there are programs and materials available to support the teaching of auditory skills, and there is evidence that itinerant teachers provide such teaching. There is also evidence that suggests that itinerant teachers are encouraged to choose a mixture of explicit teaching activities, and activities that support the generalisation of auditory skills such as by using natural conversations and interactions. What is missing, however, is evidence of the use of specific auditory skills teaching activities in mainstream settings, and evidence of how auditory skills teaching is related to specific assessments of individual student needs. It is also not clear how auditory skills teaching could occur if the available itinerant teaching time was minimal.

### 2.3.1.5 Speech.

There is a long tradition of teachers of the deaf teaching speech to DHH students. This has occurred particularly since the advent of better quality hearing aids and the publication by Ling of speech teaching manuals based on his extensive review of the literature on speech teaching for hearing impaired children (1976). More recently, there have been further improvements in amplification with cochlear implants and digital hearing aids; earlier access to amplification through early identification of
hearing loss and early intervention (Kennedy et al., 2008); and an emphasis on the natural development of speech through the provision of appropriate amplification (Cole & Flexer, 2007; Connor et al., 2006; Ling, 1988). These recent changes may have implications for speech teaching by teachers of the deaf (TOD) and itinerant teachers.

Speech teaching by TODs has been associated with improvements in speech production, speech reception, reading, and vocabulary (Paatsch, Blamey, Sarant, & Bow, 2006). It also has benefits for social outcomes (Percy-Smith et al., 2008). There are two types of speech teaching referred to in these studies. One type is providing assistance with the pronunciation of new vocabulary, particularly unfamiliar multisyllabic words; and the other type is speech teaching that targets the remediation of persistent errors in articulation or suprasegmental features. Some of the latter may require the services of a specialist speech pathologist in collaboration with the itinerant teachers (2004). The other type of speech teaching, associated with new vocabulary, has been listed as a possible teaching activity for itinerant teachers (Bullard, 2003; M. D. Smith, 1997) but there is little evidence of its use.

There is contrasting evidence regarding the provision of speech teaching by itinerant teachers. Luckner and Bowen (2006) did not include speech assessment in their investigation of the assessment practices of teachers of the deaf, nor was speech teaching considered in an investigation of the skills needed by itinerant teachers by Luckner and Howell (2002). Itinerant teachers in the study by Foster and Cue (2009) reported that speech teaching represented less than 4% of their teaching tasks and it was not listed in a study of itinerant teacher responsibilities in Texas (Alturki, 2002). In spite speech teaching not being mentioned in this study, only 67% of the Australian students in the Hyde and Power (2004) study and 77% of the US students in the 1994 study by Luckner and Miller were described as having intelligible speech. No comparable values
were available for 2013. The US values of 16% of DHH students having speech remediation as an IEP goal in 2013, and 21% in 1994, are quite different from the Australian value of 55% in 2004 (see Table 2.3.1), and may explain why parents in the West Australian study by Checker, Remine, and Brown (2009) regarded development of speech (and auditory) skills as the most important services provided by itinerant teachers.

Understanding the role of itinerant teachers with speech teaching would benefit from current Australian data on the speech needs of the DHH students. What is also needed is a description of the type of speech teaching that itinerant teachers provide. The literature has indicated three possible types: remediation of speech errors, promotion of natural speech development, and assistance with the pronunciation of new vocabulary.

2.3.1.6 Mathematics and other subject areas.

Maths was the only academic subject listed as a primary IEP goal in Table 2.3.1 apart from literacy. Even though students may have difficulties in other subject areas, particularly those with high language content, the evidence of Table 2.3.1 suggests that mathematics has particular importance for between 16% and 35% DHH students. It was not specifically listed in Foster and Cue’s (2009) study into the teaching tasks of itinerant teachers or by Alturki’s (2002) study into the responsibilities of itinerant teachers in Texas.

There is growing evidence about the particular difficulties that DHH students have with maths and science and this evidence has implications for the role of itinerant teachers in intervention in other academic subjects. Marschark and Spencer (2010) reviewed the literature regarding the achievements of DHH students in mathematics and science and ways to assist them. They concluded that there was evidence that the
achievements of DHH students in both of these subjects was behind those of their hearing peers and that their low results were related to literacy development, general world knowledge, and vocabulary (Kelly & Gaustad, 2007). These differences can be detected early (Ansell & Pagliaro, 2006; Kritzer, 2009), but are more evident in later school years (Vosganoff, Paatsch, & Toe, 2011). Problem-solving tasks involving written materials are especially difficult, and effective instruction necessitates teachers skilled in both the subject content and the learning styles of DHH students. Similar low achievement was found in Western Australian in a recent study using the results of standardised tests (Vosganoff et al., 2011) with 16 secondary DHH students enrolled in inclusive secondary schools. The majority of these students scored below the state average in mathematics (Vosganoff et al., 2011). Further analysis of the results showed that the DHH students had greatest difficulty with questions that required complex language skills including interpretation of number stories, manipulation of superlatives, and complex comparatives.

This evidence highlights the fundamental importance of language development underpinning general knowledge and literacy development, which in turn influences the ability of DHH students to access classroom instruction and written instructional materials in a variety of school subjects, including mathematics. Dickinson et al. (2010) have cautioned against attending to only lower order code-related skills. Such intervention may gain quick outcomes, but neglecting general knowledge and language competence, which require extensive and complex interventions, may have far-reaching and long-lasting outcomes. Itinerant teachers, when faced with DHH students who require extensive support in subject areas, and in literacy, may well choose language development activities in addition to attempting to attend to the specific subject skills.
Qualified itinerant teachers may not have a subject background in maths, science, or other subject areas and this may consequently affect the support they give. They may be faced with the same decisions as with literacy teaching, that is, to directly teach the class program, to teach underlying skills, or to upskill the class teacher. Research by Marschark et al. (2008) with DHH college students showed that the DHH students did best with experienced teachers of the deaf rather than subject specialists, partly because the TODs understood what the students knew and how they best learnt, independent of the subject matter.

2.3.1.7 Other abilities.

The last three student needs that were identified in Table 2.3.1 were social skills, living skills, and deaf awareness. These three areas encompass a range of needs that are commonly reported in the literature on DHH students as being addressed by itinerant teacher activities. They fall broadly into the category of social and emotional mental health. Other more recent terminology will be considered here, as applied to DHH students, including theory of mind, resilience, and self-determination.

Some studies suggest that DHH students are at greater risk of mental health disorders, particularly because of their communication difficulties (Coll, Cutler, Thobro, Haas, & Powell, 2009). Identity issues specific to deafness and educational placement have also been explored as possible mediating factors for mental health (Mejstad, Heiling, & Svedin, 2008). Each of these studies indicated that there were other possible influences on mental health outcomes that prevented definitive statements linking hearing impairment and mental health. One study directly linked mental health difficulties with language ability. That study (Fellinger, Holzinger, Beitel, Laucht, & Goldberg, 2009) of 43 Austrian DHH teenagers showed that peer relationship problems did not correlate with the degree of hearing loss but with the level of language used in
conversations with peers. It found that, when teenagers had low functional language, they were most at risk of mental health issues. Further support for the importance of communication skills for mental health was provided by a review of the literature about child abuse and deafness by Sebald, who wrote of the importance of providing “frequent and authentic experiences accompanied by language support” (2008, p. 382).

More recent research has added to the list of learning needs in this area by suggesting that TODs should foster self-determination in DHH students (Luckner & Sebald, 2013; Sebald, 2013). Luckner and Sebald (2013) suggested that self-determination be added to IEPs and provided information about assessment tools and instructional materials for TODs to use. Sebald (2013) surveyed 76 TODs, 28 of whom were itinerant teachers, and found that although they highly valued self-determination for their students, they were less likely to explicitly teach it. In relation to itinerant teachers, she suggested that the limited contact hours with students was a possible influence on the lack of explicit teaching of self-determination.

An area related to self-determination is resilience. Young, Green and Rogers (2008) conducted a literature review about how mainstream understandings of resilience apply to the experiences of DHH individuals. They suggested a definition of resilience as the successful navigation of “being deaf in a world that faces them with countless daily hassles and which may commonly deny, disable or exclude them” (Young, Green, & Rogers, 2008, p. 52). They cautioned that the very act of promoting resilience could be seen to be implying that DHH individuals have a deficit in this area, but suggested that there were potential benefits from further research and intervention in this area. This definition of resilience is linked to the need for deaf awareness activities as reported in the literature for itinerant teachers (see Table 2.3.1).
The choice of deaf awareness activities as an identified need for intervention by itinerant teachers may be due to the increase in situations where the DHH students are the only such student in their school. Mitchell and Karchmer (2006) estimated that over 80% of DHH students were enrolled in schools with two or fewer DHH peers. This isolation may be the chief reason for itinerant teacher activities such as deaf awareness and deaf social activities, particularly with deaf social clubs.

There is considerable debate about whether hearing loss necessarily results in delayed social and emotional development, with only some of the studies clearly showing a delay. For example, a recent longitudinal study of 191 DHH students over five years reported no significant difference between these students and a normative sample (Antia, Jones, Luckner, Kreimeyer, & Reed, 2011). These DHH students spent the majority of their time in the mainstream class, used oral communication, and in most cases were enrolled in their neighbourhood school—all reasons that may explain why these results differed from other studies. The study also found that participation in school and extracurricular activities was a positive influence on social development. All of the above influences were also found to be present with DHH students who were successful academically (Eriks-Brophy et al., 2006; Powers, 2011), and thus indicate possible avenues of assistance that itinerant teachers may employ. The importance of the role of itinerant teachers in assisting the social participation of DHH students was one of the findings of a qualitative study involving interviews with teachers, parents, and students in Australia on the social participation of DHH students with cochlear implants (R. Punch & Hyde, 2011). The authors found that there was a distinct difference between the communication abilities of DHH students in face-to-face communication and their communication abilities in groups. The authors also suggested
that it was important that the itinerant teacher assist the class teacher to facilitate the learning of social skills by DHH students.

One recent area of research that is relevant to social ability is theory of mind. This describes the ability to understand the feelings, ideas, and beliefs of others (Tomasello, 2003). It has been suggested that DHH students are delayed in this area due to reduced opportunities for interactions and may benefit from specific instruction to reduce this delay (Courtin, Melot, & Corroyer, 2008; Schick et al., 2007). A study by (Most et al., 2010) that compared students with hearing aids with those with implants, indicated that many of the social difficulties of DHH students were related to the pragmatic aspects of language, such as use of repair strategies, initiating and directing conversations, and sustaining joint attention. They concluded that the cause of the social delays could be attributed to limited exposure to various communication partners and strategies, limited audibility, and limited language as assessed in natural conversational exchanges rather than in formal testing. A related study found that comprehension of the emotional content of spoken language, as well as speech perception in conversation, were important influences on the quality of life of adolescent cochlear implant recipients (Schorr, Roth, & Fox, 2009).

There is some evidence that itinerant teachers choose teaching activities related to these quality of life learning needs. The data cited in Table 2.3.1 demonstrated that 21–26% of students in all three studies had deaf awareness as a primary IEP goal, and approximately a quarter of the US students also had social skills listed, as did 41% of the Australian students. Foster and Cue (2009) reported that deaf awareness and social skills were some of the direct teaching activities of itinerant teachers but they were not reported by Alturki (2002) in Texas.
In summary, there has been a shift in the language used to describe this set of learning needs, moving away from considering them as social, behavioural, mental health, and isolation difficulties towards teaching the positive qualities of self-determination, self-advocacy, deaf awareness, resilience, and theory of mind. There is contrasting evidence about the extent to which these abilities are lacking among DHH students, but there is evidence that at least some students may require explicit teaching activities to promote them. TODs may provide these activities to some extent, but there is limited evidence about what specific activities are used by itinerant teachers in this regard. All of these learning needs have been suggested as being associated with communication abilities, particularly the pragmatics of language, and it may be that itinerant teachers are addressing these areas indirectly by teaching communication skills.

2.3.2 Student backgrounds.

DHH students in mainstream settings vary considerably in their backgrounds, and these variations are potential influences on the choice of itinerant teacher activities. Backgrounds, as used here, refers to fixed descriptors of the students, including age, gender, and social-economic status, in contrast to the previously discussed learning needs that are potentially remediable by teaching. The gender and racial differences of DHH students and itinerant teachers in the US are able to be estimated from recent studies, but there is no evidence about how the racial and gender differences influence the choice of teaching activities, except to note that the gender and race demographics of the itinerant teachers differ significantly from the student demographics (Luckner & Ayantoye, 2013).

Student age is a potential influence on itinerant teacher activities. As discussed (see Section 2.3.1.4), studies of physiological developmental changes indicate that it is
critical to conduct auditory skills training as early as possible (J. K. Moore, 2002). There is also some evidence, from studies of DHH students who are academically successful, of a difference between the support provided to older secondary and younger primary school students, which suggests that academically successful older students are more likely to actively participate in IEP meetings and to negotiate for the type of support they require (Eriks-Brophy et al., 2006; Powers, 2003). Apart from these studies, there is little to indicate that age, gender, or racial differences influence itinerant teaching.

2.3.2.1 Additional disabilities.

A high proportion of DHH students have additional disabilities that may influence the itinerant teachers’ choice of teaching activities. The Gallaudet Research Institute (2011) reported that almost 40% of DHH students have additional disabilities, including attention deficit disorders, learning disabilities, or emotional problems. There are various other estimates of this percentage: at least 25% (Bruce, Dinatale, & Ford, 2008); 35% (Luckner & Ayantoye, 2013), 31% (Luckner & Miller, 1994); over 40% (Mitchell, 2004; Mitchell & Karchmer, 2006); and in Australia, 26% (Power & Hyde, 2002). The latter value was further divided into different disabilities: cognition, 11%; vision, 12%; learning, 3%; and behaviour 9%; and 69% of those with additional disabilities had more than two. It is not clear in these studies if the disabilities had been formally diagnosed by a qualified professional, or if the categorisation is based on teacher or parent reports. It is noteworthy, however, that the DSE legislation in Australia has been interpreted to mean that undocumented parental reports of a disability are sufficient to require that the educational authorities must make appropriate educational accommodation for what the parents regard as a disability (University of Canberra, 2014).
The influence of additional disabilities on itinerant teacher support activities may depend on the educational setting in which DHH students are located, a possibility yet to be examined in the literature. Itinerant teachers in some educational jurisdictions provide services to DHH students in resource rooms within mainstream schools and segregated schools, such as those designated for students with cognitive impairment, autism spectrum disorder, or behavioural difficulties (ACT Government, 2008).

DHH students with additional disabilities in mainstream classes may present additional challenges to the class teacher, but there is limited evidence of how the additional support of itinerant teachers is used in these settings. As Marschark and Spencer concluded, the research literature supports the view that the effect of an additional disability is multiplicative, not just additive (2010, p. 15). There are consistent recommendations about the importance of a team approach with these students in mainstream settings, with collaboration and consultation as key itinerant teacher roles (Bruce et al., 2008; Wiley & Moeller, 2007), but as yet there are few descriptions in the literature of itinerant teacher involvement. Most studies that have focused on DHH students with additional disabilities have been with TODs in segregated schools for DHH students. Itinerant teachers, in contrast, may support DHH students with additional disabilities in either mainstream classes, or in support rooms and units within mainstream rooms, such as classes for students with autism. Bruce, Dinatale, and Ford (2008) found that with DHH students in segregated settings who have additional disabilities, TODs seek to develop and implement a coherent program that integrates communicative, cognitive, and behavioural goals. They also consult with other professionals such as itinerant teachers for students with vision impairment, or teachers specialised for students with other disabilities. It could be presumed that such an
2.3 Student Influences

2.3.1 Integrated and Collaborative Approach

An integrated and collaborative approach may be used by an itinerant teacher, but this is still to be described in the literature.

DHH students with below average cognitive ability in mainstream settings are also likely to require support from itinerant teachers, and language ability may be the focus of such support. Recent studies with children with cochlear implants have suggested that non-verbal IQ contributes a small amount of variance in language development—less than 10% (Geers et al., 2008; Holt & Kirk, 2005). Programs such as the *Hanen Program* (Hanen, 2014), the *St. Gabriel’s Curriculum* (J. Brown, Tuohy, Mercer-Mosley, & Walsh, 2005), and *SKI-HI* (SKI-HI Institute, 2004) are examples of approaches used by itinerant teachers with pre-school and school-aged students that explicitly target cognitive goals in the context of developing listening, speech, and language goals.

In summary, mainstreamed DHH students were once mainly those who had better hearing, speech, and language than those in segregated settings (Power & Hyde, 2002), and those who had a lower incidence of additional difficulties. More recently, there are more DHH students with high support needs and with additional disabilities who are enrolled in mainstream settings. Research on itinerant teacher strategies cannot rely on averages to measure teaching activities; it must also take into account the large variance in student abilities.

2.3.2 Social and Economic Status and Ethnicity

There is some evidence concerning different educational outcomes related to social and economic status (SES) and ethnicity for Australian students. The *Program for International Student Assessment 2012* (PISA) (Thomson, De Bortoli, & Buckley, 2013) compared students across 65 countries and regions and showed that lower student achievement was associated with lower SES and indigenous status in Australia,
especially in mathematics. The mathematics results were even lower when it came to Australian indigenous students: 51% of indigenous students failed to reach the Level 2 benchmark compared to 18% of non-indigenous students. In both mathematics and reading, indigenous students were on average two and a half years behind non-indigenous students. This has implications for itinerant teachers because Power and Hyde (2002) reported that 22% of DHH students they surveyed had an indigenous Australian background, compared with a population proportion of 2%. No other literature was found that related SES and DHH students in Australia.

2.3.2.3 Hearing loss.

The degree of a student’s hearing loss may have an effect on their need for language, speech, and auditory skills, and on the type of teaching activities used. Moller (2000) found that the degree of a child’s hearing loss did not predict a significant amount of variance in vocabulary and verbal reasoning skills. In spite of this, a study in the UK by Rodd and Young (2009) concluded that hearing loss was one of the criteria that administrators used to determine levels of support hours by itinerant teachers. This raises the question as to whether the itinerant teachers choose teaching activities based on the degree of hearing loss, or on the functional outcomes of the hearing loss in terms of language, speech, and listening skills. One possible way in which hearing loss influences the choice of activities may be that the student requires more assistance with the use of assistive technology.

2.3.2.4 Use of assistive technology.

Assisting with technology has been a consistent responsibility for itinerant teachers (Clifford, 2008; Hyde & Power, 2004b; Luckner, 1999; Luckner & Howell, 2002; Luckner et al., 2012). An illustration is provided by Clifford (2008), who examined teaching episodes of itinerant teachers, and demonstrated that they had to
constantly assist their students with hearing aids and other technology, which effectively halved their available teaching. The need for assistance, and the time consumed with such support, are increased by the increasing complexity of technology, including hearing aids, cochlear implants, FM devices, and sound-field units, and captioning and computer note-taking services. Some educational jurisdictions have the services of educational audiologists who manage most of the technology, but the itinerant teachers often assist the schools, parents, and students to use the technology effectively (Alturki, 2002; Checker et al., 2009; Foster & Cue, 2009). An illustration of the influence of the new technology was provided by a qualitative study by Miller (2008). He described how itinerant teachers had to learn AV teaching activities to address the learning needs of students with cochlear implants who were now in mainstream settings, as a result of the closure of a resource room. This illustrates that sometimes the introduction of new technology with a student may also require the itinerant teacher to learn new skills.

It should be noted that the role of the itinerant teacher with assistive technology varies between countries and across states within those countries. In Australia, free, up-to-date technology is provided by Australian Hearing (AH) and itinerant teacher roles may thus be limited to trouble-shooting FM devices and assisting parents and students to regularly access AH services. This is in contrast to the itinerant teacher responsibilities and activities with assistive technology in other locations, as illustrated by a report from Texas where 57% of itinerant teachers provided other assistive devices for their students (Alturki, 2002). Surveys of itinerant teacher activities must therefore consider the possible role of the itinerant teacher in ensuring that the assistive technology is available, working, and used. This role may depend on the location of the student as well as the technological competence of the itinerant teacher.

2.3.3 Research models.
There are currently two relevant conceptual models that seek to relate teaching practices to students’ needs. These models could be used to guide itinerant teachers and may influence their selection of teaching practices and the supervision they receive from their administrators. The two models—a *Continuum of Support Services* and a *Cascade of Benefits*—are based on extensive research and will be described here in detail.

2.3.3.1 A continuum of support services.

Antia et al. (2010) developed a model to describe the relationship between support services and student needs based on the results of a multiple case study involving 25 students. They examined both the services offered and the students themselves. The students were a stratified sample drawn from participants in a larger longitudinal study of 198 students (Antia et al., 2008). From the results, the “continuum of support services” model was developed. The model contains a list of the services provided in terms of the amount of student support needed (Antia et al., 2010). Figure 2.3.3.1 is a presentation of the model developed by Antia et al. (2010) and provides a hierarchical list of the possible services provided by itinerant teachers, with the choice and location of services strongly determined by the amount of support provided.

As illustrated, itinerant teachers provide consultative services to all students, even those who need the least support. They provide some direct academic services to those students who have the greatest overall needs and receive the most support hours. Support for language development is included as part of language arts even though the information from the larger study suggested that itinerant teachers provide distinct language support.

According to this model, this type of language support is only for those with high support needs, a conclusion at odds with studies reviewed earlier of DHH students who were academically successful (Eriks-Brophy et al., 2006; Powers, 2011).
Even though this model clearly supports the notion of a hierarchy of student needs, it does not provide strong support for a language-teaching role for the itinerant teachers and speech teaching is not mentioned. A strength of the model, however, is the attempt to relate itinerant teaching to student needs.

### 2.3.3.2 Cascade of benefits.

Another model of the relationship of support services to student needs was provided by Summerfield and Marshall (1999) who introduced the term “cascade” to

<table>
<thead>
<tr>
<th>Amount of Support</th>
<th>Support Service</th>
<th>Type and Location of Support</th>
</tr>
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<tbody>
<tr>
<td>Least Support Needed</td>
<td>IEP Development</td>
<td>Consultation Services with no Withdrawal</td>
</tr>
<tr>
<td></td>
<td>Progress Reports</td>
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<tr>
<td></td>
<td>Communication with School Staff</td>
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<tr>
<td></td>
<td>“Checking in with Student”</td>
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<tr>
<td></td>
<td>Emotional/Social Support</td>
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<td></td>
<td>Developing Self-Advocacy</td>
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<td></td>
<td>Amplification</td>
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<td></td>
<td>Case Management</td>
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<td>Tutoring Homework</td>
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<td>Study Skills</td>
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<td></td>
<td>Auditory Training</td>
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<tr>
<td></td>
<td>Maths</td>
<td></td>
</tr>
<tr>
<td>Most Support Needed</td>
<td>Language Arts: Spelling, Reading, Language, Writing</td>
<td>Direct Services with Withdrawal</td>
</tr>
</tbody>
</table>

*Figure 2.3.3.1. Continuum of support services model as presented by Antia et al. (2010)*
describe the hierarchy of needs of DHH students. The concept of a cascade in this context suggests that student needs have a hierarchical relation, rather than being a list on unconnected outcomes. The model implies that direct early support for basic student communication needs in regard to audition, speech, and language flows into medium-term outcomes of engagement in mainstream educational process. These early school outcomes in turn flow into a range of social and academic outcomes, and finally into long-term goals of adult independence and high quality of life.

Summerfield and Marshall (1999) developed their model to argue for cochlear implants in the UK, using a health technology assessment procedure. Their model was evaluated by a cross-sectional survey of 2858 DHH children in the UK (Stacey et al., 2006). The effectiveness of paediatric cochlear implants for the sub-sample of 383 children with implants was evaluated by examining the relationship between student variables that were amenable to intervention. The large numbers enabled the researchers to control for factors such as SES, other disabilities, linguistic background, and hearing levels. The results of the survey were in agreement with the model.

Figure 2.3.3.2 is an adaptation of the original Summerfield and Marshall (1999) model by the researcher for this thesis. Because the original model referred specifically to cochlear implants, it has been modified here to include students with the full range of assistive hearing devices, because cochlear implants provide a level of hearing similar to that available from hearing aids for a child with a severe hearing loss (Boothroyd & Boothroyd-Turner, 2002; Stacey et al., 2006).
Even though it is primarily concerned with spoken language, this cascade model may be useful with DHH students who use signing because it emphasises the importance of good communication skills to enable the student to access high quality mainstream education. This would include assisting the student to work with interpreters and note-takers.

This adapted model has direct implications for guiding educational practice as it implies that effective, long-term student support should systematically plan for the habilitation of language ability in order to improve a range of student outcomes.
Student learning according to this model requires less specialised support in the form of direct teaching because of the early development of communication skills. Those well-developed communication skills enable students to access academic subjects by utilizing the specialized subject skills of the class teacher. This model suggests that a child with well-developed listening and communication skills is able to participate effectively in mainstream schooling and these abilities will in turn lead to social, behavioural, and vocational gains. What is missing from the model, however, is the process for effective inclusion in the school. The model perhaps assumes that children with cochlear implants, who also have well-developed listening and language skills, will not require further assistance to access the class instruction. The question must be asked whether the students will achieve academic success without itinerant teacher support, given that these students now function as if they had a severe hearing loss. Research with students with mild and moderate hearing losses suggests otherwise (Borders, Barnett, & Bauer, 2010; Jamieson, 2010). In addition, research from Canada, with DHH students who were academically successful (Eriks-Brophy et al., 2007), clearly pointed to the need for consistent support from itinerant teachers, to both assist inclusion by consultation, and to provide direct support for communication and academic needs.

2.3.4 Summary of student needs.

The literature reviewed in this second section suggests that DHH students have an expanded list of school needs, in addition to their regular academic needs, which require specialist teaching by itinerant teachers. This expanded list includes the traditional TOD areas of auditory skills, speech, language, signing, and use of assistive hearing technology. It may also include other areas compromised by communication delays such as mental health, social skills, and cognitive skills. There is also evidence of some influence on the choice of teaching activities from the backgrounds of the
students, particularly those relating to additional disabilities and SES. Literacy abilities have been shown to be most compromised by language delays, with subsequent limitations being imposed on other subject areas. The list of student needs can be seen to be hierarchical, with progress in some areas cascading into benefits in others, and with language as a critical skill for academic and social development. This implies that the effectiveness of itinerant teachers may well be related to their effectiveness in language teaching. To this end there is a need to scrutinise the language teaching activities used, beginning by seeking to understand the language assessment procedures used to inform teaching practice. Such scrutiny would also need to include specific data on the developmental, learning, and curriculum needs of DHH students, particularly those needs related to language ability.

2.4 External Influences

The first two sections of this review have examined itinerant teacher activities alongside student needs. There is a wider context, however, that may influence the choice of itinerant teacher activities to address these student needs, beginning with policy that arises from legislation.

2.4.1 Legislation and policy influences.

Itinerant teachers and their supervisors must comply with government legislation. These national policies are filtered through guidelines set by states, schools, and supervisors. The influence of these national and regional policies for itinerant teachers may be evident in the IEPs, and so legislation concerning IEPs will be specifically examined.

The international and national policy frameworks will be outlined by considering legislation from the three countries that are the locations of most of the literature reviewed in this study: the US, the UK, and Australia. Although legislation
varies across these countries, authors concerned with inclusion (Armstrong, Armstrong, & Spandagou, 2010; Foreman & Arthur-Kelly, 2008) have supported the view that the legislation stems from different expressions of an international human rights agenda. That agenda supports the promotion of an inclusive education system as expressed in The Salamanca Statement (UNESCO, 1994) and the Convention on the Rights of Persons with Disabilities (UN, 2006).

2.4.1.1 The United States.

The Education for All Handicapped Children Act of 1975, which established standards for students with disabilities, was later amended to become the Individuals with Disability Education Act of 2004 (IDEA) as discussed by Luft (2008). The revised Act includes a requirement that IEPs must be provided for all students with disabilities. IDEA also provides that the classroom teacher and the parents must be part of the IEP process; teaching practices should be based on peer-reviewed research; access should result in an education that yields successful education results; and progress should be based on learning objectives that are the same for all children. The No Child Left Behind Act of 2001 (NCLB) gave further emphasis to the legislative imperatives for effective instruction for DHH students by mandating that states measure, report, and account for academic progress for all students ("No Child Left Behind," 2001)

An online survey by Luckner and Bowen (2006) on assessment practices used with DHH students was in response to the impact of NCLB on assessments. Assessments, particularly for academic content, were found by the authors to be the key link between legislation and practice, mediated by the IEPs. There was limited information in this study about the specific activities of itinerant teachers because they represented only 21% of the participants, but the authors called for more research on the effective use of assessment practices to guide IEPs and teaching practice.
These legislative amendments may influence the role of itinerant teachers as they negotiate and implement IEPs. Missing from the research literature are specific investigations of whether (or how) the program features mandated by legislation are represented in the IEPs of DHH students, and to what extent teachers’ practices reflect those IEPs. Some insights into the responsibilities arising from IDEA were presented by Luft (2008), who wrote about the difficulty of defining roles for US educators of the deaf, in response to IDEA legislation. She presented a model of how US educators of the deaf can fulfil their responsibilities for the implementation of IEPs. She distinguished between a consultant teacher who provides indirect services, and an educator of the deaf who provides indirect consultancy services as well as specific tutoring and instruction for identified student needs. She noted that the direct instruction and tutoring allowed the student to access the class instruction as provided by the class teacher (Luft, 2008). Luft argued that itinerant teachers and resource room teachers were in the category of providing direct instruction, suggesting, in agreement with Miller (2008), that itinerant teachers have to fulfil the special teaching roles that resource room teachers once did. This has important implications for research with itinerant teachers because it suggests that it is inappropriate to assume that itinerant teachers fulfil only a consultancy role; the other possible elements of their roles have also to be examined.

2.4.1.2 The United Kingdom.

Background anti-discrimination legislation is contained within the Disability Discrimination Acts of 1995 and 2005. Educational provisions within these acts were addressed by the white paper Excellence for All Children: Meeting Special Education Needs (DfEE, 1997b), which set out the government agenda for education, and laid the groundwork for later legislation and papers on inclusive education.
This later legislation was the *Special Educational Needs and Disability Act* (SEN) (2001a). It made discrimination against disabled students unlawful and made it clear that students with a disability cannot be refused education in a mainstream school on the grounds that education cannot be provided in the mainstream sector. The provisions resulting from this Act were set out in the *Special Education Needs Code of Practice* (UK Department for Education and Skills, 2001b). The strategy for implementing SEN was expressed in *Removing Barriers to Achievement* (UK Department for Education and Skills, 2004), which articulated a commitment to inclusive education. The document targeted early intervention, teachers’ skills, and improved partnerships—especially with parents. It aimed to embed inclusive practices in every school and raise expectations of progress (Armstrong et al., 2010). These goals are important, but as Armstrong et al. (2010) reported, there are serious doubts that the education system is more inclusive as a result of such government policy frameworks.

In the UK, IEPs must be used (UK Department for Children, Schools and Families, 2011). They set out the targets related to the student’s individual needs but must also relate to general school outcomes including communication, literacy, and mathematics. In common with recommendations from other jurisdictions, they must address the strengths and successes of the student when setting the targets and deciding on the strategies to use (Dempsey, 2012).

The initial influence of these government policies on the education of DHH students was a change in the typical educational placements of these students towards more inclusive environments (Powers, 2002). Apart from research noting this change, there has been little investigation into the provisions for DHH students within the mainstream environments. (Powers, 2002, p. 232) has suggested that the lack of support for research that examines the educational outcomes of students in mainstream settings
may be because the policies are driven by philosophical or sociological issues that may not necessarily relate to individual needs of DHH students.

In summary, in spite of the government policy and legislation for students with disabilities in both the US and the UK, there is little evidence that these policies guide the daily activities of itinerant teachers, apart from influencing the likely location of students with disabilities in mainstream schools. The policies also increase the administrative requirements to implement the mandated planning and review processes. There are specific requirements in the legislation concerning the processes involved in developing IEPs. These processes have the potential to link the legislation, policies, and teaching practices of itinerant teachers, but there is little evidence yet of their influence.

2.4.1.3 Australia.

The Australian DSE ("Disability Standards in Education," 2005) (2005) was the result of a consultation process in response to the Disability Discrimination Act ("Disability Discrimination Act," 1992) (DDA), which made discrimination on the basis of disability unlawful. The DSE required educational providers to make provisions to ensure equal participation and access for students with disabilities and provided a framework for implementation of its recommendations. One section of the DSE that is relevant to support provided by itinerant teachers is:

the teaching and delivery strategies for the course or program are adjusted to meet the learning needs of the student and address any disadvantage in the student’s learning resulting from his or her disability, including through the provision of additional support, such as bridging or enabling courses, or the development of disability-specific skills (Section 6.3d).

This passage can be taken to indicate legislative support for two roles for itinerant teachers: consultation and collaboration activities, and the teaching of the
disability-specific skills such as listening, speech, language, and use of hearing technology. It is quite difficult, however, to make direct links between this legislation and itinerant teacher activities. It could be argued that the DSE legislation as quoted above mandates that educational administrators assist with the development of what are described as “disability-specific skills” in order to provide DHH students with access to the curriculum on the same basis as their hearing peers (Australian Commonwealth, 2005, p. 4).

2.4.1.4 The Australian Capital Territory.

The legislative frameworks that operate internationally and nationally have been explored as they relate to inclusive education. In Australia there are also state policies at the state or territory level that affect the provision of educational services in government schools and non-government schools. These policies will now be explored for the ACT, which is the location of this research project, serving to illustrate the type of policies that are possible influences at this level.

The ACT Government has produced a number of reviews in response to the DDA 1992 and the DSE 2005 including the Review of Special Education in the ACT (Shaddock, MacDonald, Hook, Giorcelli, & Arthur-Kelly, 2009) and the strategic plan that was the response to this review, Everybody Matters (ACT Government, 2010). Specific requirements resulting from these policies were outlined in a policy document that set the parameters in all public schools in the ACT, Students With a Disability: Meeting their Educational Needs (ACT Government, 2008). This document began by reminding schools of their responsibilities to comply with the DSE, and then gave specific details of how those standards applied to provisions for students with a disability. These were the basic parameters for the itinerant teachers in the ACT. They included the requirement that all schools establish what they termed a “special needs
team,” that all students received an IEP developed in conjunction with the student and parents, and that a special education program review meeting would be conducted annually. It also specified that the school staff must be made aware of their specific responsibilities by means of appropriate in-service educational experiences and consultative support.

Each of these latter requirements mandated specific activities for itinerant teachers, particularly in the areas of collaboration and support, and gave an accountability framework to guide and determine specific teaching activities as determined by the IEPs. It also provided the context for the administration and supervision of the itinerant teachers. In view of these specific requirements, the IEPs are clearly potential influences on itinerant teachers’ choice of activities in the ACT.

2.4.1.5 The Australian Capital Territory itinerant teachers.

The Review of Special Education in the ACT (Shaddock et al., 2009) included a very brief review of the operations of Hearing Support Teams as they operated in the territory. The report concluded that the Hearing Support Service was “highly respected and well-utilised” (Shaddock et al., p. 24) and was providing “invaluable support” (Shaddock et al., p. 108). The review had a limited amount of time and data for investigating each section of the disability provisions, but it served notice of the intention of the government to ensure that the educational provisions complied with the DSE 2005. These intentions were then partly realised in the strategic plan, although that document had limited detail concerning the Hearing Support Service. This review thus required that changes needed to be made while maintaining the current positive profile of the Hearing Support Service both within the Education and Training Directorate and within the community.
2.4.1.6 Summary of policy influences.

Within each country, legislation has evolved from broad goals that promoted general concepts, such as inclusion, to specifying the details about particular practices, such as the mandatory use of IEPs, which includes details about their composition, goals, and procedures. More recently, legislation has focused on the accountability of school systems for student outcomes using the IEPs, and has thus highlighted the importance of assessments to guide teaching practices that address the specific needs of each student. Itinerant teaching practices in the ACT could be expected to show influences from this legislation in the use of practices that promote inclusion, particularly assessment and accountability procedures as expressed in IEPs. Literature relevant to policies and practices with IEPs in Australia will be more closely examined for these influences.

2.4.1.7 Use of IEPs within Australia.

Legislation in the US and the UK mandate IEPs, but this is not the case in Australia. Two relevant Australian studies were conducted by Dempsey (2012) and P.M. Brown (2013). Dempsey (2012) sought information on the use of IEPs by means of a secondary analysis of the 2009 data from the Longitudinal Study of Australian Children (Australian Institute of Family Studies, 2011). The participants were a cohort of 10,000 children who were between eight and nine years of age, and the data were sourced retrospectively from parent and teacher surveys. Some of the survey items referred to the presence of an IEP as well as relevant demographics concerning the type and location of the school, the teacher, and the child. A standardised measure of the child’s physical, social/emotional, and learning outcomes was also calculated.

Dempsey’s (2012) results give an indication of the use of IEPs in Australia. Even though over 6% of parents identified their child as having a disability or ongoing
medical condition, only 53% of them had an IEP. There were IEPS for 7% of the children, but their parents did not indicate that they had a disability or an ongoing medical condition. Those students with the lowest academic outcomes were more likely to have an IEP. Another survey question showed that only 64% of the parents who reported that their child received additional school service also reported that they had an IEP. These values suggest that a number of students with a disability are being provided with school services without written administrative accountability procedures and definitely without collaborative IEPs that include parents.

There were no conclusive results relating to the presence of IEPs in the different school systems (i.e., public, independent, and Catholic) except to note that students with a disability are overrepresented in the public school system. Other results indicated that the presence of IEPs was unrelated to teacher qualification and experience, or gender of the child. Concerning regional variations, IEPs were more likely in two states, Victoria and Western Australia. In NSW, an enquiry into the education of students with a disability (Parliament of NSW, 2010) noted that the public school system did not currently maintain records of IEPs, but that this would change as current policy initiatives implement the recommendations of the enquiry.

A study by P. M. Brown (2013) in Victoria provided detailed information about the use of IEPs with DHH students. The files for 88 DHH students were examined and 90% contained an IEP. The files were examined for the types of assessment that were used and the links between these assessments and the IEPs. The student goals in the IEPs were also assessed using the Specific, Measurable, Attainable, Realistic, Timely (SMART) criteria (Bateman & Herr, 2006). The study found that 50% of the files did not contain audiological information, and 14% did not contain standardised assessments, including the mandatory national and state-wide curriculum assessments.
There were few links between the standardised assessments that were used and the IEP goals, with 64% having no links, and 30% containing some limited evidence of links. Informal assessments were also examined, including criterion-referenced tests and analysis of samples, and of those, 58% did not link to IEP goals. The SMART criteria were present for many of the goals in that they were relevant, realistic, and achievable. This study indicated that most students generally had an IEP, and regular assessments, but the IEPs goals had limited relationship to the assessments. It was possible that the IEPs influenced teacher behaviour because of the generally high quality of the goals.

The results of the Dempsey (2012) study do not indicate a high prevalence of IEPs in the ACT, but the data collection phase of his study pre-dated both the current research project and the recent ACT Government Strategic Plan (2010), which required all public schools in the ACT to have current IEPs for students with an identified disability. It is possible therefore that DHH student information found in the ACT will contain both student assessments and IEPs that inform itinerant teacher practice.

2.4.2 Mainstream teacher research.

There are a number of developments within general teaching that potentially influence the teaching practices of itinerant teachers, either by influencing the classroom context for support, or by directly influencing the teaching practices of the itinerant teachers themselves. These include differentiated instruction, quality teaching frameworks, explicit accountability and assessments procedures, and direct teaching using evidence-based practice.

2.4.2.1 Differentiated instruction.

Differentiated instruction has been promoted to cater not only for students with disabilities, but also for the individual learning styles of every student. It involves modifications and adjustments to teaching practices, the curriculum, and also learning
environments; it includes differentiation in instructional approaches, teaching materials and assessment (Tomlinson, Brimijoy, & Narvaez, 2008). Tomlinson et al. have written extensively on differentiation and related research and stated simply that “differentiated instruction seems promising as a response to the variety of learning needs students bring to school every day.” (Tomlinson et al., 2008, p. 1). At the basis of differentiation is assessment. As Hewitt and Weckstein (2013, p. 78) set out in their guide for differentiation in high schools, assessment is the “linchpin of differentiation.” Assessment includes both baseline assessment and ongoing assessment of student progress, which enables and drives the differentiation in instructional approaches, materials, and programming. These two aspects of assessment have been discussed in this chapter in relation to language (i.e., standardised tests and continual progress monitoring).

Researchers have argued that itinerant teachers should assist mainstream teachers to support differentiation for DHH students (Eriks-Brophy et al., 2006; Giorcelli, 2004; Luckner & Ayantoye, 2013; Luft, 2008; Powers, 2011), but there has been little research that has examined the adjustments provided by mainstream schools. Itinerant teachers may also be using differentiation to select and employ their direct teaching activities in the areas of literacy, language, auditory skills, and speech, but there has been little research in this area because of the lack of information about the direct teaching activities of itinerant teachers.

2.4.2.2 Direct instruction.

A study by P. M. Brown and Paatsch (2010) in eastern Australia examined self-reports of teacher beliefs and teacher practices for 28 experienced TODs, including itinerant teachers. The authors asked whether the teachers’ language teaching was influenced by a positivist philosophy, which lends itself to direct instruction strategies,
or by a constructivist philosophy, which seeks to develop language skills in natural settings (P. M. Brown & Paatsch, 2010). The authors concluded that there was a strong link between what the teachers identified as their teaching philosophy and their reports of the way in which they sought to develop language and communication skills among their students. Apart from this study, there is little research that has examined the use of these two types of teaching for the development of communication skills such as auditory perception, speech, and language abilities.

2.4.2.3 Quality teaching and assessment.

Improving the quality of teaching practice through system-wide promotion of specific in-service education programs has been the focus of a number of educational jurisdictions in which itinerant teachers work. An example from NSW, which is also known and used within the ACT, is the quality teaching framework, as promoted by Gore (2008). One aspect of quality teaching that is particularly relevant to this review is the use of high quality assessment data to drive teacher strategies, an approach recommended by the ACT strategic improvement programs, as set out in the ACT Department of Education and Training Strategic Plan 2010-2014: Everybody Matters (ACT Government, 2010). Stiggins (2004) has suggested that assessments have gained such prominence that there are estimates that assessments can take from a quarter to a third of a teacher’s time. He argued that this time is worthwhile if the teachers use the information properly. This implies that examining the assessments and the way in which the information is used would help in understanding itinerant teacher activities.

In a survey of assessment practices by 87 experienced master teachers in the US, which included itinerant teachers, Luckner and Bowen (2006) reviewed research with hearing students that had concluded that time used for assessment, particularly formative assessments that provide a continuous flow of information to guide...
instructional practices, was productive. The authors reported that many educational jurisdictions have mandated such standardised testing and were linking the outcomes to teacher and school appraisals, such as with NCLB and “adequate yearly progress” expectations in the US (Luckner & Bowen, 2006). The authors further reported that there were concerns that this standardised testing had narrowed the instructional practices to those testable outcomes. They also reported that students with disabilities were either not taking part in the testing process (P.M. Brown, 2013), or that their underlying needs were not being addressed because of the pressure to show academic results. This influence of testing regimes is different from what Powers (2003) referred to as “academic press” (i.e., the effect of being in regular schools and being exposed to the high expectations of the normal curriculum) which he saw as an important part of the inclusion process. This tension between individual student needs and external standardised tests was also described by Cameron (2005). She presented an example of an itinerant teacher who felt pressured to teach obtuse, content-specific language to a student with very limited vocabulary, thus limiting the time available for teaching much-needed social language skills.

Stiggins (2004) raised concerns about the usefulness of once-a-year testing to guide instructional practices. His concerns implied that, if testing of DHH students is conducted by someone other than the itinerant teachers, perhaps months before the itinerant teacher works with the student, that there may be a lack of congruence between teaching practices and testing. Lucker and Bowen (2006) found that communication assessment was frequently not conducted by itinerant teachers, and contrasted this with research that suggested that teaching is more efficient if the teacher conducts the precursor assessments. They implied that communication teaching by itinerant teachers would be most effective if they conducted the assessments themselves. In their
discussion of their findings of the common assessment practices used, the authors concluded that:

In light of the critical role that communication and language play in learning, it seems imperative that teachers of students who are deaf or hard of hearing understand the language achievement levels (e.g., goals, objectives, standards) they want students to achieve so that they might better identify student needs, track and enhance student growth, and verify student mastery (Luckner & Bowen, 2006, p. 415).

Even though this quote refers specifically to language teaching, it could well apply to other areas of direct teaching, and the quote indicates the importance of examining the relationship between teacher activities and assessed student needs, a linkage rarely examined in the literature concerning itinerant teachers.

2.4.3 Inclusive education.

As discussed earlier, inclusion has its basis in a social justice and human rights agenda, and refers to a process of including students with a disability in the least restrictive environment to facilitate equal access to the class curriculum with their class peers (Eriks-Brophy & Whittingham, 2013). There is evidence that schools have needed assistance to make changes to facilitate inclusion (Beattie, Jordan, & Algozzine, 2006; Giorcelli, 2004) and that itinerant teachers have assisted this process (Luft, 2008; Teller & Harney, 2005; Vernon, 2007). The activities used by itinerant teachers will thus be considered but with the caution, as noted by Powers (2003), that there is a need for research to focus on the academic outcomes of DHH students, rather than just rates of inclusion. Powers (2003) stressed that the location of the student is not the chief measure of successful inclusion. He further stated that inclusion is a process that can
lead to measured outcomes and is not just the simple placement of students with disabilities in mainstream classrooms without necessary adjustments and support. It must result, he argued, in improved outcomes, and outcomes must be comprehensive, not just in the areas that standardised tests can measure. A similar approach was presented by the review of the Disability Standards in Education ("Disability Standards in Education," 2005). The review recommended educational inclusion, rather than just locational and social inclusion. Itinerant teacher strategies are thus subject to an evolving understanding of inclusion (P. M. Brown & Paatsch, 2010). Some of the studies about the teaching activities of itinerant teachers have been focused on the extent to which they facilitated inclusion, as it was viewed at the time, rather than on student outcomes. For this reason the literature concerning itinerant teachers and inclusion will be examined using an understanding of inclusion that places primary importance on student outcomes.

2.4.3.1 Itinerant teachers and inclusion.

Even though an early response to the inclusion movement was the enrolment of more students with disabilities in mainstream schools (Armstrong et al., 2010), there has more recently been a focus on the quality of the inclusion. This was expressed in a review of the DSE in Australia in 2012, where “social and locational inclusion” was contrasted with educational inclusion, with the latter requiring the provision of specialised support services in mainstream settings. This is similar to views expressed in earlier research with successful older DHH students in which the students requested specialised support services by itinerant teachers to develop speech, language, and academic skills, in addition to differentiation and accommodations provided by the class teacher (Eriks-Brophy et al., 2006).
Hyde and Power (1994) reported that itinerant teachers in Australia use a mixture of roles for supporting DHH students: consultative collaborative, withdrawal teaching, or team-teaching. These roles will be reviewed first, followed by a discussion of less common support models, such as the “push-in” model (Rabinsky, 2013).

Consultancy and collaborative support.

There is general consensus that most DHH students require some degree of consultative support to be successful in mainstream settings (Marschark & Spencer, 2008). Such support assists the school to make the necessary adjustments in line with the IEPs and the relevant legislation. This is obvious for students with high needs, but it is also still the case for students with mild and moderate hearing losses (Bess et al., 1998; Moeller, 2000) and for DHH students who are academically successful (Eriks-Brophy et al., 2006).

Most often, itinerant teachers are the chief provider of consultancy services—often called indirect services (Luft, 2008). Consultancy services are chiefly concerned with assisting schools with adaptive teaching methods and educational adjustments, coordinated through the IEPs. They include making necessary accommodations for tests (Cawthon, 2009), checking the use of specialised equipment such as FMs and captions, and preparing materials, assessments, and reports. The provision of these indirect services to schools by itinerant teachers is not in question; the balance between indirect and direct services, however, is still a matter for consideration. Part of this consideration involves measurement of such activity. Is the importance or effectiveness of a role measured by the amount of time used, the frequency of an activity, the stated importance of an activity by the itinerant teacher, parent, student, or school; or perhaps by consulting the IEP? Some further light will be shed on these issues by consideration of the issues relating to the use of withdrawal.
Withdrawal teaching.

The debate about the value of withdrawal teaching will be examined in detail because it concerns policy influences on the choice activities itinerant teachers use. As Clifford (2008) has suggested, the location of support influences the type of support provided. An obvious example is that speech teaching involving listening cannot take place in a noisy classroom, and it may be distracting to other students in a quiet classroom.

DHH students may be withdrawn from their mainstream class by the itinerant teachers for all or part of their allocated support time. This is referred to as “pull-out” teaching in the US, and withdrawal teaching in the UK and Australia. This practice has consistently appeared in the research literature that describes itinerant teacher practice—often with associated debate about the appropriateness of withdrawal practices in the context of policies advocating full inclusion of students with disabilities.

An early example of research concerning inclusion was a survey of all itinerant teachers in Pennsylvania. Although there was only a 31% return rate, the respondents were predominantly in favour of an approach including a combination of both models based on the individual student’s needs (Finley, 1997). Not all advocates, however, take this pragmatic view, and some instead argue from an ideological viewpoint that withdrawal should be avoided (Furlonger, Sharma, Moore, & Smyth-King, 2009)—a situation that could effectively prevent much auditory skills teaching.

An Australian study with DHH students illustrated the issues associated with this ideological debate (Hyde & Power, 2004a). Based on their survey results, the authors concluded that there was a lack of adherence to the notion of inclusion because itinerant teachers commonly withdrew their students from classrooms for a few hours a week; a result consistent with similar studies (Luckner & Ayantoye, 2013; Luckner &
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Miller, 1994). This contrast between the philosophical or ideological perspectives of many authors, the policy perspectives of many constituencies, and the common working practices of itinerant teachers may be due to a lack of agreement about what withdrawal time was used for. If it was for language, speech, and listening teaching, then it seems to be in agreement with the DSE legislation that requires the provision of disability-specific skills. Such practices would also be in agreement with the recommendations from a currently mandatory teacher in-service program (University of Canberra, 2014) explaining the DSE. That program includes an example of a student who requires specialized physiotherapy services, and suggests that such services be provided within their mainstream school during school time, in a separate room provided by the school for that purpose. Without evidence about the actual teaching goals and practices, however, the question of whether direct teaching promotes inclusion cannot be answered.

Another example of an ideological viewpoint concerning inclusion is an article that described a postgraduate program for preparing itinerant teachers for Australian schools (Furlonger et al., 2009). The authors argued that it was important that the itinerant teachers who graduated from their program would not withdraw students for direct service. The authors based their policy on the argument that inclusive philosophy and policies supported the need for increased rates of indirect service patterns, including “collaborative problem-solving, planning and teaching” (Furlonger et al., 2009, p. 293). Even though the authors listed a number of descriptive studies of itinerant teachers, which described and advocated for the consultancy aspect of the itinerant teacher role, they did not provide evidence that consultancy support required the lessening or omission of direct instruction. Conversely, they did not provide evidence that direct teaching services impacted negatively on a collaborative, consultative approach with
DHH students. Even though there seems to be consensus that inclusion prospers when there is a facilitator assigned to each student with special needs (Jorgensen, Schuh, & Nisbet, 2006), this does not imply, however, that this should necessarily be the itinerant teacher, or that the one and only role of the itinerant teacher is to be a facilitator.

One piece of evidence referred to by Furlonger et al. (2009) to justify not using withdrawal was a reference to an Australian study by Blamey et al. (2001) of 87 primary school students that was reviewed earlier. One recommendation of the researchers was that “children with intermediate amounts of usable residual hearing can substantially improve their speech and language skills by substantially increasing the amount of direct language and speech instruction under good listening conditions” (Blamey et al., 2001, p. 282). Curiously, however, Furlonger et al. (2009, p. 293) cited this research to support an indirect service model of intervention by itinerant teachers. They argued that even though half of the children in the study were from NSW schools where direct service was often used, the language levels of all the students were well below their hearing peers. They concluded that this was evidence that direct instruction had failed.

Apart from the paper by Furlonger et al. (2009), which draws some tenuous conclusions based on other research, there is no apparent research that shows that a consultation-only model for itinerant teachers will enhance student language levels and academic outcomes, or conversely, that direct teaching by itinerant teachers will hinder consultation. Arguments of this nature that seem to set consultation against the provision of specialized direct services, without any clear evidence, seem to illustrate what Marschark and Spencer were referring to when they wrote about practice being based on “beliefs and attitudes rather than on documented evidence” (2010, p. 25).
A recent qualitative study further illustrated the relevance of this issue for itinerant teacher activities. Rabinsky (2013) used a case study design to study three students to explore the push-in model of inclusive education. Observations, interviews, and focus groups were used to gather data from teachers and students. Even though this situation has limited generalizability, the emergent themes supported the push-in model with the qualification that success depended on the student having language levels within 1–2 years of their peers. Rabinsky (2013) reported that, for those students who required support for their language needs, the high noise levels within the classes limited effective strategies and hence they required withdrawal time. The study supported the notion that the influences of classroom noise and withdrawal policies intersect to influence strategies used to facilitate student language development.

Rabinsky’s (2013) finding that withdrawal is used to attend to students’ need for language assistance in quiet conditions is in direct contrast with that suggested by many other researchers (Hyde & Power, 2004a; Luckner & Miller, 1994). The most common reasons for the use of withdrawal given by the latter authors is that either itinerant teachers chose withdrawal because of their earlier experiences as a teacher of the deaf in segregated settings, or that the pre-service training was focused on individualised teaching instruction (Luckner, 1991; Luckner & Howell, 2002). These latter statements may indeed be factually correct, but it is incorrect to assume that these are the reasons for the use of withdrawal without documented evidence. These same researchers have consistently documented the time pressures on both itinerant teachers and regular class teachers (Antia, 1999; Hyde & Power, 2004; Luckner & Howell, 2002; Yarger & Luckner, 1999). Given these time constraints and the complex consulting activities they engage in, an explanation that is congruent with the data in these studies is that the itinerant teachers are using their time to teach communication skills, but there is no
supporting evidence for this, or other explanations. As a further illustration of an ideological argument in this area, Foster and Cue (2009, p. 436) refer to the benefits of co-teaching and consultation, and they then contrast this with the evidence for pull-out teaching, giving the impression that they are mutually exclusive, or that attending to one lessens the importance or realisation of the other.

There is evidence that itinerant teachers, schools, students, and parents are satisfied with the consultative activities of the itinerant teachers, and there is no evidence that consultation is limited by direct services (Checker et al., 2009; Hyde & Power, 2004b). Research concerning withdrawal—an itinerant teaching activity that is used with the majority of students for the majority of the teaching time—would benefit from directly asking itinerant teachers about that very practice. It may also help to investigate the wishes of the students and parents as possibly expressed in the IEPs, and to examine closely the student needs that itinerant teachers are being asked to address. A fuller examination of withdrawal teaching may then assist with understanding itinerant teacher activities. The lack of congruence between the views of some authors and common itinerant teacher practices suggests that there is a need for more research to examine specific influences on practice other than the physical location of the specialised supports.

*Other support models.*

Co-teaching is where the itinerant teacher teaches all or part of the class that includes the DHH student, and has also been strongly recommended by some writers (Kreimeyer, Crooke, Drye, Egbert, & Klein, 2000; Luckner, 1999), although in view of the high levels of itinerant teacher time required, it may be impractical in many cases. There is no reason to doubt the possible benefits of this approach, but research consistently demonstrates a limited use of this by itinerant teachers. It may be
impractical for itinerant teachers to teach this way if, for example, they have a primary school teaching background, and are supporting a student in specialist high school classes. Scheduling and time constraints may also be limitations. The consistent limited evidence of use of co-teaching cannot be taken as evidence that itinerant teachers do not value it. If it is still to be recommended in the literature, then it has to be demonstrated that it would be in accordance with the individual needs of the student as expressed in the IEP or as documented in student assessments.

Another support model identified in a study in Cyprus may have relevance for itinerant teaching with secondary students in other countries. Hadjikakou, Petridou, and Stylianou (2005) examined the support services for secondary DHH students using questionnaires and interviews of students, teachers, and parents. Their study, the first study since full integration of all students in Cyprus began in 1990, described the effect of the model used. Itinerant teachers in this model were coordinators only; individual and group pre-tutoring in examinable subjects was provided by the mainstream subject teachers as part of their normal teaching load. The itinerant teacher coordinators ensured that the rooms were acoustically treated, that assistive technology was used, and that classroom teachers used appropriate adjustments in their regular classroom teaching, including adhering to the regulation that classes with DHH students had to have a reduced number of students.

There was a high response rate to the surveys: 100% of the students, 88% of parents, 94% of head teachers, and 78% of subject teachers. The responses indicated a high level of satisfaction with this model, except for the 22% of students who had great difficulty understanding anything at all in the general classrooms, independent of pre-tutoring. However, 78% indicated that they could participate quite a lot in class lessons, perhaps because: (a) 55% of teachers substantially modified their teaching to
accommodate them, or (b) 70% of the classroom had had acoustic modifications specifically for the DHH students. The students recommended in the surveys that the pre-tutoring hours should be increased, and that there should be more modifications to the language levels of the content and tests. No attempt was made to survey the academic outcomes of the students or their hearing, speech, and language abilities, so the survey results that suggest a high level of satisfaction with this model are not necessarily based on outcome measures, but rather on a combination of individual expectations and opinions. It would have been interesting to have had more information on the 22% of students who had great difficulties in class and to have learnt what plans were in place to cater for them.

Other questions in the survey related to the levels of teacher understanding of the adjustments needed by the DHH students. These questions illustrate the type of questions that could be asked to test the effectiveness of the adjustments needed in secondary classrooms to assist with inclusion. In Cyprus, the DHH students receive direct teaching services, though not from the itinerant teachers, with evident success. If such specialised supports are not available in other countries, itinerant teachers may be expected to provide similar services, even though they do not have secondary school teaching qualifications.

2.4.3.2 Two Australian qualitative studies of inclusion.

There are two recent qualitative studies concerning the inclusion of DHH students supported by itinerant teachers in government schools in the Australian state of NSW, a similar geographic and educational setting to the current project (Cameron, 2005; Carson, 2001). Both studies were conducted in response to the increasing inclusion of students with special needs in regular mainstream schools, and sought to critically examine the success of inclusion practices within government schools for
DHH students. They examined the range of variables that impacted successful inclusion, including past educational settings and family and student variables. The main variables of interest, however, related to the regular school settings, particularly the classroom teacher, rather than the itinerant teachers involved. Both studies will be examined in some detail because of the similarity in geographic, legislative, and educational settings to the current project, and because they involved students supported by itinerant teachers.

*Inadequate provisions for language needs.*

A collective case study by Cameron (2005) critically examined the inclusion of five profoundly deaf students in rural NSW who were supported by itinerant teachers. The language abilities of these students were examined in some detail, together with the educational provisions for their language and academic needs. All students were in mainstream classes at the time of the research. They ranged in age from 6–18, all had profound losses and they used a variety of communication methods, including speech, Auslan, and Signed English. Cameron examined the influence of variables associated with the communication style of the classroom teachers as evident in the teaching style, lesson type, curriculum adaptations, and actual mode of presentation of content. She collected a large and varied amount of data using classroom observations, semi-structured interviews, language performance data, and historical records. From the results Cameron made a number of generalisations that were validated as descriptors of this sample.

First, Cameron (2005) highlighted the importance of linguistic development for social, emotional, and academic success; development that she found was not able to be easily supported within the schools. As she stated, “If the student has a language delay, then it is quite possible that this is because they come from a deprived linguistic
background” and in some cases “the school appeared to contribute to this deprivation” (Cameron, 2005, p. 475), possibly because they were largely unaware of this need and therefore did not provide specific language learning opportunities. Second, Cameron partly attributed this lack of planning for linguistic development to the lack of understanding of the language abilities of the DHH students. In a highly relevant passage she stated that:

Language development needs were apparently not ascertained at the time of enrolment. In none of the cases was there evidence that the students’ linguistic needs were formally identified, nor any identification of the provisions required for language learning (2005, p.476).

Lastly, she recommended that improvements in the interaction style of the class teacher would have substantial benefits for the language development of these students, but there was limited evidence available to support this conclusion.

This study had limited generalizability because it was restricted to five subjects who varied considerably in age, educational backgrounds, communication abilities, and other disabilities. This variation in student characteristics illustrated the possible complications that arise with seeking to generalise about DHH students. A second limitation was the lack of any ability to draw conclusions about causation in regard to variations in student abilities. An example was one of the students named Todd who was in his last years of schooling and had extremely limited literacy skills and little or no social interactions either at school or after school. The study identified serious inadequacies in the educational support for Todd, but it was not possible to say with a degree of certainty that different types of educational support would have resulted in different outcomes for Todd.
A third limitation was the inability of this study to clearly demonstrate that the interactive teaching style that it promoted was able to bring about improvements in linguistic and academic learning. In view of the poor acoustic conditions of general classrooms (Flexer, 2004), and the paucity of the linguistic environments that Cameron (2005) found, it is difficult to accept that significant language development could occur within such classrooms. In addition, research with hearing English as a Second Language (ESL) students demonstrates (Lyster & Sato, 2013) that significant language development is hampered by the concurrent cognitive demands of academic progress. Cameron’s (2005) evidence highlighted both the importance of interaction for language development and what she interpreted as the adverse academic effects of the pull-out model of support. There was not enough evidence from this study, or others, to support the notion that an interactive general classroom teaching style, with difficult academic content, will enhance language development more than a highly interactive itinerant teacher working in better acoustic conditions with content attuned to the student’s ability and background knowledge.

These limitations aside, this highly relevant Australian research involving itinerant teachers portrayed the failure of the educational system for some students. The failures were due to a lack of awareness of both the linguistic needs of the students and the educational provisions required to address those needs.

*The inclusion process with hard of hearing students from an ESL background.*

Carson (2001) examined three DHH students in one metropolitan government primary school who had mild to severe hearing losses and a non-English speaking home background. Their hearing levels were sufficient to restrict their access to teacher instructions and classroom discussions, but they had much greater access than the students in the Cameron (2005) study. Carson (2001) examined a wide range of archival
data over many years, including IEPs, written reports, and review minutes. Questionnaires and interview recordings with students, school personnel, and parents were also used. No standardised test information was provided about language ability, and this was clearly not the focus of the itinerant teacher’s support.

This wealth of data provided detailed descriptions of how inclusion worked for these students, but the limited sample prevented more general conclusions. There was a disparity evident at this school between the ideals of inclusion and the individual knowledge and practices of the school personnel. This result was not unexpected, given that the trend towards full inclusion of students with a range of special needs was recent and rapid, and resulted in DHH students being enrolled in schools that had had little history of inclusive education. Carson (2001) found, however, that most of the 20 mainstream teachers in her study were willing to provide effective inclusion if they were given the appropriate information. This finding had implications for appropriate pre-service and in-service training of classroom teachers, as well as indicating the importance of the consultative role of the itinerant teachers.

The ESL backgrounds of the children, the presence of other disabilities, and cultural and individual family factors were identified by this study as influences that prevented the full use of early diagnosis or early intervention, influences that still operate today even though universal newborn hearing screening has increased the likelihood of early engagement with intervention. Carson (2001) concluded that her study “is one example of the current practice of inclusive education. Findings from this research can be used as data for future studies on inclusive education” (Carson, 2001, p.239). Her study highlighted the need for research into itinerant teaching to seek out information on the influence of the ESL background of the students, and to take careful
note of the presence of other disabilities. It also indicated that early diagnosis may not necessarily mean satisfactory use of early intervention services.

2.4.4 Mainstream school influences.

Policy is the ideological framework that sets the context for the students and itinerant teachers. The physical framework of individual schools, however, is a potential source of influence. This includes the location and type of school; the acoustic, visual, and linguistic environment of the classroom; and the school personnel, especially the classroom teacher.

2.4.4.1 Location and educational jurisdiction.

Research into itinerant teacher roles and responsibilities in the US that has included teachers from a number of states, geographic locations, and types of schools, has been characterised by a wide variety in the responses of the teachers (Alturki, 2002; Foster & Cue, 2009). Some studies have acknowledged that location and educational jurisdictions are the source of some of the reported variance (Luckner & Ayantoye, 2013; Luckner & Hanks, 2003), but for privacy reasons they were unable to collect identifying data that would enable comparisons to pinpoint the differences. It is also not clear if the possible influence is mediated through differences among the teachers or through differences among the students.

Variations in mainstream student outcomes have been shown to be influenced by both the educational jurisdiction, and the location of the school in a metropolitan, rural or remote area, as demonstrated by the Australian results of PISA (Thomson et al., 2013). PISA 2012 provided measures of comparison from 65 countries, including between students from the ACT and the seven other states and territories within Australia. Academic outcomes in reading, mathematical, and scientific literacy were available for comparison according to school sectors (government, Catholic, and
independent), socio-economic status, and location (metropolitan, rural, or remote).

Within Australia, the 2012 PISA results showed that metropolitan students outperformed regional students. Students in independent schools performed better than students within the Catholic system, who had higher outcomes than students from the government schools. There was no data to indicate how these differences in location and educational settings affected outcomes except for the influence of SES. When SES was statistically controlled there were no significant differences between school sectors. These results indicated that research with itinerant teachers may need to be controlled for influences arising from differences in locational and educational settings, and may need to collect data on the SES of the students.

Other possible location differences include individual school policies concerning inclusion and assessment practices; such differences may be apparent in case studies only, rather than in broad-scale research. Location may also affect access to specialised services such as speech pathologists, audiologists, and regular exposure to deaf culture. These differences may result in itinerant teachers making up for these restrictions by facilitating access to deaf culture and specialised services as part of their normal role. These possibilities are yet to be examined in the literature.

2.4.4.2 School type.

Most of the research with itinerant teachers acknowledges their work in primary (elementary) and secondary schools, yet there is also evidence that they may work in many settings: pre-schools, public schools, and independent schools, as well as in segregated special schools across all of these sectors. They may also work in resource rooms—special educational “units” in Australian terminology—for students with disabilities other than hearing impairment. This occurs in the ACT, (ACT Government, 2008) and in other Australian states (NSW Dept. of Education and Training, 1998).
The influence of each of these settings has yet to be explored in the literature. For example, it is possible that there are significant differences between the activities provided to primary and secondary students and between those students in segregated settings. In addition, individual schools may have particular school policies that influence the teaching activities.

2.4.4.3 *Physical environment.*

The following section considers possible differences in itinerant teacher activities arising from the difficulties that DHH students experience in different mainstream settings. Such settings may, for example: (a) be noisy and visually distracting; (b) offer limited opportunities for quality interactions with a supportive adult; and (c) require the use of language that has a high cognitive load. Itinerant teachers may choose activities to compensate for these difficult conditions.

*Noisy classrooms.*

Numerous studies have conclusively demonstrated the poor acoustic conditions of regular school classrooms for all students (Crandell & Smaldino, 2000; Nelson, 2000). There are mandatory guidelines in the US (American National Standards Institute, 2002) for the levels of background noise and the reverberation times for general classrooms as well as for rooms for DHH students. In Australia, these guidelines are not mandatory and many classrooms and playgrounds exceed the recommended guidelines (R. Punch & Hyde, 2011). It is possible that the distractions of the classrooms may cause itinerant teachers to choose activities and locations that allow the DDH student to hear clearly and focus on the content of their teaching, as suggested by Powers (2002, p. 11). The conditions may also influence the amount of support requested to compensate for content missed in the classroom. As Marschark and Hauser
noted, “… research apparently has not addressed the question of access to classroom information by deaf children who rely on spoken language” (2008, p.11)

A study of the effects of the physical environment was conducted by Guardino and Antia (2012). Using three classrooms at a segregated school, and multiple baselines, they examined whether modifying the acoustic and visual environments of the classrooms would increase engagement of the students and decrease disruptions to their learning. The modifications were designed by consultation with the teachers and were relatively simple physical changes to the furniture and materials, to lessen distractions from the acoustic and visual environments. The results showed that functional changes to behaviour in each classroom occurred as a result of the modifications. There was also a demonstrated link between academic engagement and reduced disruptive behaviour; and it was noted that the modifications persisted after the study ended. The authors noted the potential implications for itinerant teachers who often work in difficult physical conditions. This study has important implications for itinerant teachers as they seek to assist with the provision of optimal learning conditions for their students, either by judicious choice of the classroom or by actual physical or social modifications to the existing classrooms.

*Visually distracting classrooms.*

Research has indicated the possible effects of visual distractions on learning by DHH students. Marschark and Hauser argued that DHH students are more alert visually and that visual distractions may therefore limit the attention given to teachers (p. 69). They also presented findings that teachers of the deaf may assist signing students to develop their peripheral vision, particularly if they have hearing parents.

Other research (Quittner, Smith, Osberger, Mitchell, & Katz, 1994) has suggested that DHH students have difficulties with sustained visual attention, perhaps
explaining anecdotal reports of increased distractibility. They also found that providing
greater access to sound enhanced their visual attention capabilities. These findings
suggest that visual distractions, in addition to acoustic distractions, may also influence
itinerant teacher strategies, including the use of withdrawal.

Limited supportive adult interactions.

Research into language development with hearing and DHH children has
demonstrated that scaffolded adult to child interactions are required to enable language
development (Bruner, 1983; Snow & Conti-Ramsden, 2014). Authors have argued that
similar interactions are necessary for DHH students who have delayed language and
with DHH students who begin school with age appropriate language (Kretschmer, 1997;
Moeller, 2000; Powers, 2003). Mainstream classrooms with 20 students have less time
available for adult to child interactions than what may be available for a child at home,
although both situations are influenced by the quality of the interactions. Cameron
(2005) illustrated the importance of teacher style with her distinction between teachers
with a transmission style of teaching, and teachers with an interaction style. Her
multiple case studies illustrated that the language of DHH students could not develop
significantly with class teachers who had a low interaction style. It was not clear,
however, whether the lack of language development was due to: (a) the limited amount
of teacher time available per student; (b) the extent to which such interactions were at
the language level of the student; or (c) the poor acoustics of the classroom. All three
influences could also limit the ability of DHH students to hear and understand
classroom teachers with a high interaction style.

The limited amount of supportive adult interaction time that is available for
DHH students in mainstream classes may influence the activities of itinerant teachers,
because they may choose teaching activities that maximise interaction time to
compensate for the reduced interactions in large and noisy classes. Wu and Brown (2004) found that parents who had participated in a family-centred early intervention program had high expectations of the language facilitation strategies of the program teachers. Itinerant teachers may be expected by parents from these programs to continue to provide high quality language development activities, including adult-scaffolded adult interactions, even though the child is also striving to understand language with a higher cognitive load than home settings.

Language with a high cognitive load.

Children use play, interactions with other language users, and everyday experiences to learn language (Chapman, 2000; Cook, 2000; Kretschmer, 1997). They can then use this developed language to engage in new experiences and to learn content. DHH students, on the other hand, may require more effort to hear accurately while trying to understand the new content (Nelson, 2000), learn new vocabulary (Fagan & Pisoni, 2010), and maintain and develop their language structures (Powers, 2011). These multiple tasks are beyond hearing students from a second language background (Lyster & Sato, 2013), and the task is analogous to struggling readers trying to learn to read using science textbooks in poor lighting conditions. All this suggests that DHH students are exposed to a higher cognitive load than their hearing peers in many classroom learning situations, and suggests that itinerant teachers may react to these challenges by their choice of teaching activities, or students may request specific teaching activities from itinerant teachers to compensate. These compensation strategies may support the implementation of classroom adjustments as well as providing direct teaching services (Eriks-Brophy et al., 2006). As an illustration, students in secondary classes stress the difficulty of listening to the teacher while taking notes, hence the request for note-taking support (Alturki, 2002).
2.4.4.4 Class teacher influence.

General descriptions of itinerant teaching (Bullard, 2003; M. D. Smith, 1997) have strongly recommended that itinerant teachers need to carefully negotiate their roles with the class teachers. Empirical research has indicated that itinerant teachers have consistently engaged in consultation and collaboration with class teachers, and that these activities have been consistently rated as important by class teachers (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994); school executives and school administrators (Rodd & Young, 2009; Teller & Harney, 2005); parents and older students (Checker et al., 2009; Eriks-Brophy et al., 2006); and the itinerant teachers themselves (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994). These same studies have described a range of consultation and collaboration activities involving class teachers that include informal discussions outside of class time; formal meetings and review meetings; presentation of in-services; preparation of curriculum materials; assistance with adjustments to teaching styles, materials, and programs; assistance with assessments; and team teaching (Alturki, 2002; Foster & Cue, 2009).

In spite of the evidence that itinerant teachers and classroom teachers consistently value and engage in mutual consultation and collaboration, there is little evaluation available of specific related activities. There are general findings available that all stakeholders generally regard consultation as effective (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994), with little detail as to what specific activities or methods are most effective, or what specific outcomes have been achieved (e.g., demonstrated changes in classroom teacher practices and attitudes). There is also evidence of uncertainties in role responsibilities arising from evidence that: (a) 38–40% of itinerant teachers reported that they did not have job descriptions
and that their university preparation programs did not prepare them adequately for the actual job responsibilities (Luckner & Ayantoye, 2013); (b) there is a lack of consensus about whether itinerant teachers should be engaging in direct teaching, and if so whether it is direct teaching of academic subjects as opposed to direct teaching of specialised communication skills; and (c) IEPs may not relate directly to classroom practice (P. M. Brown, 2013). It is possible that these uncertainties in role specifications may allow for idiosyncratic arrangements between the class teachers and the itinerant teachers. Such arrangements might include academic tutoring (Clifford, 2008), particularly with beginning itinerant teachers (Guteng, 2005). There is some evidence that the nature and extent of consultation may vary between school settings, such as the indication that secondary classroom teachers may be less receptive to suggestions from consultations (Eriks-Brophy et al., 2006).

In summary, there is consistent evidence that class teachers influence the provision of consultation and collaborative activities, but there is a lack of evaluation of the specific outcomes of these activities. There are also unanswered questions about the influence of uncertainties in the agreed roles of the itinerant teachers, the influence of particular school settings, and the experience and role understandings of the itinerant teachers.

2.4.4.5 Teacher assistant influence.

Another type of inclusion support is the use of teacher assistants, which is yet another possible source of influence on itinerant teachers. Assistants are increasingly used to support students with disabilities, but there are persistent concerns about possible overuse and ineffective practices with the use of these teacher assistants. Giangreco (2013) has cautioned about “assigning the least qualified personnel to the students who present the most complex learning challenges” (2013, p. 157). Even
though he noted that students with more complex needs and low incidence disabilities may need to receive specialised support services in order to access the curriculum, he cautioned against over reliance on pull-out methods that are concerned with raising underlying educational skills. He argued that students can still access information from inclusive classrooms without grade level skills. This is essentially untested in the literature, as acknowledged by Giangreco, who cautioned “that much of the debate is conceptual rather than research based” (Giangreco et al., 2010, p. 251). Little of this debate about teacher assistants relates specifically to DHH students, except that itinerant teachers may support DHH students who receive support from teacher assistants because of the presence of other disabilities such as intellectual disability or autism spectrum disorders. In spite of this limitation, Giangreco’s (2013) article highlighted a number of difficulties with the use of teacher assistants that may also apply to itinerant teachers (e.g., the social difficulties that may result from teenage boys being supported in mainstream schools by middle-aged teacher assistants).

There is little research to assist in understanding the relationship between itinerant teacher activities and teacher assistants, but there is enough information to suggest they are another possible source of influence, and warrant examination. Itinerant teachers often provide services in conjunction with teacher assistants and thus they may be influenced by their presence—or absence. Itinerant teachers may be chiefly responsible for directing the program of the teacher assistant; they may also work in collaboration with them, under the direction of the IEP; consequently their choice of activities may be a mixture of complementary or compensatory strategies. Itinerant teachers may chose activities to fit in with the particular pattern of teacher assistant use that is directed by regional, school, or individual negotiations.

2.4.5 Parent Influence.
Guidelines for IEPs in the UK, the US, and the ACT mandate the inclusion of parents in the planning and review process (see Section 2.4.1), and early intervention using the family-centred model has potentially raised parental expectations about their involvement in and influence over the activities of itinerant teachers. Parental expectations have been examined in a study in Western Australia, which used a family-centred paradigm to examine itinerant teacher support by asking the parents about their views on the services itinerant teachers provided (Checker et al., 2009). The students were in rural and regional locations with a wide range of hearing losses, and most received one or two visits per week. The highest parent rating was for providing specialised assistance to develop language and literacy skills, followed by building rapport with child and family, developing communication skills, and providing one-on-one assistance. Consultation with the school was rated next. The researchers contrasted this parent preference for direct services with the literature on inclusion, once again suggesting an ideological either/or position. The parents were unconcerned about the use of withdrawal, citing the important issue as being the provision of specialised services. The researchers were concerned, however, that the parents did not value their own contact with the school as being important, apart from the contact with the itinerant teacher. The researchers suggested that parent/itinerant teacher contact was important in developing team-work and collaboration for successful inclusion.

Two studies of successful inclusion have highlighted the importance of developing “respectful partnerships” between itinerant teachers, class teachers, parents, and the students (Eriks-Brophy et al., 2006; Powers, 2011). It should be noted that both of these studies were with academically successful DHH students who may have begun school with age appropriate language skills. They both suggested that even these students require such close collaboration and implied that those students with greater
needs would require greater collaboration between all parties. Both studies, and an earlier study by Luckner and Muir (2001), concluded that not only was parent involvement vitally important, but the student and parent/family influences were also stronger than that of the school personnel. The list of parental suggestions from these studies is very similar to that of itinerant teacher activities, suggesting that itinerant teachers may choose activities to support parents and in some instances to compensate for limited parental support. It should be noted, however, that both the families and the students in these studies of academically successful DHH students clearly stated that they needed more itinerant teacher support than just a consultation, because speech, language, and academic skills were fundamental to successful inclusion.

2.4.6 Itinerant teacher influences.

2.4.6.1 Itinerant teacher qualifications and experience.

Itinerant teachers vary in their teaching qualifications, in their experience prior to their itinerant teacher role, and also in their experiences as an itinerant teacher. Each of these aspects may influence their choice of teaching activities. Itinerant teacher research routinely incorporates questions about the qualifications and experience of the itinerant teachers, and most studies have found that itinerant teachers are generally fully qualified as TODs, with the possible exception of itinerant teachers in isolated areas (Luckner & Miller, 1993) or those filling casual relief roles. Many studies of itinerant teachers have therefore been with fully qualified teachers, often with a self-selected group of committed itinerant teachers (Kluwin et al., 2004; Yarger & Luckner, 1999), or with itinerant teachers designated by their administrators as “master teachers” (Luckner & Bowen, 2006). Research may benefit from including a wider range of itinerant teachers that includes inexperienced teachers.
The significance of experience is supported by the findings in some studies that many itinerant teachers have learned many aspects of their role on the job (Luckner & Howell, 2002; Luckner & Miller, 1994; Luckner & Muir, 2002), rather than in undergraduate or graduate courses. Until very recently, some itinerant teachers reported that they received very little from their preparation courses, (Luckner & Ayantoye). The findings indicate that perhaps TOD qualifications may not be as significant as experience as an itinerant teacher. The findings also indicate the possible presence of mechanisms within an itinerant teaching team that function to exert strong influences on inexperienced teachers. These mechanisms include explicit leadership, supervision, collegiality, and support networks, but there are no reports of these mechanisms in the literature. These suggestions are without direct evidence but a study with an intact population of itinerant teachers may be able to examine and address them.

The teaching background of itinerant teachers may be as regular teachers, as TODs in segregated school settings, or itinerant teaching may be their only teaching experience. Power and Hyde (2003) found that 77% of Australian itinerant teachers had prior regular school experience, and 68% had also worked as TODs in segregated settings. Studies by Luckner also showed that, on average, itinerant teachers had worked previously as regular teachers (Luckner & Ayantoye, 2013; Luckner & Howell, 2002; Luckner & Miller, 1994). Their prior teaching experience could have been in early childhood, primary, or secondary settings, however over 60% of itinerant teacher caseloads are determined primarily by geography rather than by training or experience (Luckner & Ayantoye, 2013; Luckner & Miller, 1994; Power & Hyde, 2003), so itinerant teachers with early childhood qualifications and experience may find themselves working in secondary schools and vice versa. Lack of appropriate background may well limit their understanding of the appropriate teaching and learning
processes as well as their confidence in collaborating and team teaching with the class
teachers. This may be particularly important for DHH students with high literacy needs
where the itinerant teacher has only secondary school experience, or conversely, where
itinerant teachers with early childhood experience may be assisting students with
secondary essay writing. In contrast to this suggestion, however, Marschark et al.
(2008) found evidence that teachers of the deaf are more effective than subject teachers,
simply because they have a better understanding of the needs and learning styles of the
students, irrespective of their understanding of the content.

Several authors have reported that many itinerant teachers worked previously as
TODs in segregated settings, in which a wide range of collaborative and consultative
skills were required—activities for which TOD training courses did not prepare them
(Bullard, 2003; Luckner & Miller, 1994; M. D. Smith, 1997). As Luckner and Howell
(2002) found, itinerant teachers most frequently had to learn these consulting roles on
the job, in contrast to direct teaching, in which they were already proficient. It is thus
possible that previous experience in segregated settings may predispose itinerant
teachers to choose direct teaching over collaborative teaching, as suggested by Hyde
and Power (2004), but there was little evidence to support that proposal in any study.

2.4.6.2 Itinerant teacher beliefs and practices.

Evidence about the job descriptions of itinerant teachers supports the importance
of identifying itinerant teachers’ own understandings of their responsibilities, in
addition to the official job descriptions or their designated roles in the students’ IEPs.
Several studies have indicated that a high proportion of itinerant teachers had never seen
a job description: 40% and 41% in US studies almost 20 years apart (Luckner &
Ayantoye, 2013; Luckner & Miller, 1994), and 38% in Australia (Hyde & Power,
These high values suggest that individual teaching styles and beliefs may be an important influence on the choice of activities for a large number of itinerant teachers.

Even if a job description existed, teacher personal beliefs and styles could still influence the selection of teaching activities. P. M. Brown and Paatsch (2010) explored the connection between teacher beliefs and teacher practices with TODs in Australia in a study previously reviewed (see Section 2.4.2.2). Of the 28 teachers surveyed, 17 demonstrated a connection between beliefs and practices. Seven teachers also indicated that the teaching practices were influenced by the philosophy or program of the school or organisation. Other influences identified by thematic analysis were the inclusion movement, professional experience, in-service educational programs, and family and student influences. Some teachers went outside the prescriptions of the survey to comment that the type of approach depended on the students they were working with. Because there was no information about the students, the influence of the needs of the students was hard to determine, other than noting the references that were made to it in the open-ended responses. This type of thematic analysis is necessarily limited because of restrictions on the amount of data available in open-ended responses, and the validity of interpreting what was meant. There was also limited information as to the recruitment and demographics of the participants, which makes it difficult to generalise to other settings. In spite of these limitations, their study seems to be the first to investigate the link between teacher beliefs and general teaching practices among TODs, suggesting that selection of activities can be due in part to the underlying beliefs of the teachers. P. M. Brown and Paatsch (2010) also illustrated the need for closer examination of the extent to which the itinerant teaching style interacts with student, school, and parental needs, as expressed in the IEPs.
2.4.6.3 Itinerant teacher working conditions.

There are consistent reports of itinerant teachers facing difficulties to do with time pressures, work scheduling, and isolation, which may influence their teaching. An early study of itinerant teachers’ stress by Dawson (1985) showed that over a third were experiencing burnout. Kluwin and Stewart (1994) conducted an exploratory study of the manner in which the working conditions of teachers of the deaf influenced their teaching, particularly focusing on isolation. They observed that school governance and the physical environment interact in a complex way with the personal style of the TOD, which suggested that role definitions, individual school requirements, and the physical environment are possible influences on teacher practices. Further evidence of the impact of working conditions was provided by a qualitative study by Guteng (2005), which included descriptions of itinerant teachers wandering hallways and playgrounds in search of quiet locations in which to conduct direct teaching.

Time constraints and scheduling difficulties of itinerant teachers were consistently identified through surveys and interviews (Guteng, 2005; Kluwin et al., 1994; Luckner & Hanks, 2003; Luckner & Miller, 1993; Reed, 2003; Yarger & Luckner, 1999), and so can also be regarded as possible influences on teacher activities. Interview responses from a US study provided evidence for the influence of both the amount of available time and the location of the teaching sessions on the support activities (Clifford, 2008, p. 65). The persistent nature of these findings indicates that a comprehensive study of itinerant teacher activities should include an examination of working conditions and the possible influence of these conditions on the support activities. Studies of TODs with DHH students in segregated settings may not have relevance in mainstream settings unless constraints are considered that are imposed by scheduling, lack of time, physical environment, and personal isolation.
2.4.6.4 Caseload size.

Hyde and Power (2004) found that within Australia, 49% of itinerant teachers saw less than 11 students, and 15% saw more than 40. In contrast, in some areas of the UK, itinerant teachers each support over 80 students (Consortium for Research in Deaf Education, 2014) and the research by Clifford (2008) describes itinerant teachers who only provided weekly sessions of either 30 minutes or one hour. Itinerant teachers in the US who responded to the survey by Luckner and Ayantoyne (2013) saw on average 12 students a week, and provided consultation to a further 11 students. This wide variation in the amount of regular support time may influence the type of support activities provided.

2.4.7 Summary of external influences.

The last section of this literature review has identified a number of additional influences on the ways in which itinerant teachers seek to address student needs. These external influences include policies arising from legislation and advances in mainstream and inclusive education, both of which may be evident in IEPs and documented student assessments. Other possible influences are the parents, class teachers, teacher assistants, the physical environments of individual schools, as well as influences from the backgrounds, qualifications, experience, working conditions, and role definitions of the itinerant teachers themselves.

This literature review has identified a number of gaps in the literature about itinerant teacher activities including: (a) a detailed description of direct teaching activities, particularly those related to communication teaching; (b) a consideration of the relative importance of direct teaching using either skill-based sequences or incidental learning; (c) an examination of the reasons for teachers choosing to pursue direct teaching in a withdrawal setting (i.e., the most common teaching activity of
itinerant teachers); (d) a determination of the relative importance of the documented learning needs of students and their relationship to itinerant teacher activities; and (e) external influences on itinerant teacher activities. All these gaps hinder an understanding of the extent to which itinerant teacher activities address student needs, and inform the specific research questions for the present study.

2.5 The Research Questions

2.5.1 Aims of the project.

This project sought to examine the full range of influences on the choice of support activities provided to DHH students by itinerant hearing support teachers. A total population was invited to participate in a broad survey examination of itinerant teacher and associated student characteristics, followed by strategic interviews.

The goal was to obtain a rich description of the influences on itinerant teacher support including: (a) the educational system; (b) the regular school; (c) the itinerant teachers; and (d) individually assessed student learning needs.

2.5.2 Specific questions.

1. What support activities do itinerant teachers provide for DHH students—either indirectly to school staff or directly to DHH students?
   a. How can these activities be described, quantified, and categorized?
   b. What “core” activities are common to all or most students, schools, and itinerant teachers, and which activities vary?

2. What are the influences on the range of activities pursued by itinerant teachers and on the variation among those activities?
   a. What needs are addressed by the common core activities?
b. For all other activities: How do itinerant teachers’ intervention activities relate to the specific developmental, learning, and curriculum access needs of the students—with a specific focus on the linguistic needs of the students?

i. What is the role of specific assessments of students’ skills and abilities in making these determinations, and how do itinerant teacher activities vary relative to the nature of such assessment data?

ii. What are other influences external to the student (e.g., parent choices or school policies, system policies, etc.) in determining the range and mix of activities pursued by itinerant teachers?
Chapter 3 Methods

Two broad tasks were performed to answer the research questions. The first was to describe, measure, and categorise the activities used by a population of itinerant teachers in the ACT, using broader and more detailed parameters than currently exist in the literature. The second was to examine possible influences on the choice of activities arising from a detailed examination of their students’ educational needs, particularly linguistic needs, and influences external to the individual students, including policies, schools, and itinerant teacher demographics.

A mixed methods design in three phases was used to gather the data describing itinerant teacher activities, student needs, and other possible influences. In the first phase, the teaching activities used for each student were surveyed in order to describe, measure, and categorise the activities, in preparation for examining their association with possible influences (Appendix B). The survey also sought data on two possible kinds of influences, itinerant teacher demographics and some basic student data. The survey also contained open-ended questions (Appendix B) that directly asked the participants for the reasons for the choice of activities. In the second phase, detailed information on students’ needs was examined from student files for further associations with the itinerant teacher activities. In the final phase, itinerant teachers were interviewed individually and in focus groups about the influences on their choices of activities. The interviews explored the full range of potential influences deriving from schools, systems, policies, student characteristics, and personal characteristics.

Methods for data-gathering and analysis were chosen to provide triangulation of data sources and methods in order to corroborate results.
Quantitative analysis was used to provide numerical results of the measurements of the activities and the association of the activities with possible influences arising from student and itinerant teacher characteristics. Qualitative analysis was used to examine the complexity of this population of students with special needs, to pursue possible explanations based on individual beliefs and perceptions, and to explore a range of possible external influences.

3.1 Participants

The principal participants in this study were the entire population of itinerant teachers who worked with students with hearing impairments in the ACT. The study was focused on how they worked with specific students, which required detailed information about the educational needs of the students they served. The students served by these itinerant teachers were therefore also participants in the study. Consent for participation was sought from parents, guardians, and if they were over the age of 18, the students. The information statement and relevant consent forms for student participants and their guardians are included as Appendix C.

3.1.1 Itinerant teachers.

All itinerant teachers of DHH students who worked in schools in the ACT were eligible to participate in the research. In this study, “schools” refer to preschools, regular schools, support units within regular schools, and special schools. There were no segregated schools or units for DHH students in the ACT at the time of data collection.

All the itinerant teachers who participated worked in either public or independent schools in the ACT and were employed by the Education and Training Directorate (ETD) of the Act Government. ACT schools operated by the
Catholic Education Office use a different support model that does not involve itinerant teachers and only supports a few DHH students (personal communication, P. Kelly, 4.11.2010). The only itinerant teachers excluded were those who worked exclusively in early intervention with children prior to preschool. In total, 100% of the 14 eligible itinerant teachers participated in the survey stage of the research, and 71% (10) participated in both the interviews and focus groups.

All itinerant teachers were employed and managed by the public educational system, the ETD of the ACT. Notably, independent (non-government) schools in the ACT had individual contractual arrangements with the ETD by which ETD itinerant teachers provided support to DHH students enrolled in those independent schools. The itinerant teachers followed the individual school policies of the independent schools but were under the guidance and supervision of the executive within the ETD. All participating itinerant teachers were therefore subject to the same management and leadership policies, even though each school, public or independent, may have had different school policies regarding matters such as workspaces, timetables, and liaison arrangements with the school executive.

The participants’ qualifications, relevant to their status as teachers of the deaf, are presented in Table 3.1.1. Most had relevant postgraduate qualifications, although just over a quarter had no qualifications as a teacher of the deaf and were employed to fill temporary vacancies. Only one itinerant teacher had a Masters degree, which is the current requirement in the ACT to gain permanent employment as an itinerant teacher. Table 3.1.1 also shows the number of years the itinerant teachers had worked as teachers of the deaf. More than a third had
little experience and four of these five were employed in casual vacancies; over half had many years of experience. The teaching backgrounds of the participants prior to working as an itinerant teacher are also shown in Table 3.1.1. Most had some experience in primary teaching, with a few having pre-school or infant school experience as well. Over a quarter had some experience in secondary teaching.

Table 3.1.1
*Teacher of the Deaf Qualifications, Experience, and Teaching Background*

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Number</th>
<th>% of itinerant teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualification</td>
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<td></td>
</tr>
<tr>
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<td>29</td>
</tr>
<tr>
<td>Graduate</td>
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<td>7</td>
</tr>
<tr>
<td>Graduate certificate</td>
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<td>57</td>
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<td>Masters</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Years of experience</td>
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<td></td>
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<tr>
<td>0-2</td>
<td>5</td>
<td>36</td>
</tr>
<tr>
<td>3-10</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>11-20</td>
<td>5</td>
<td>36</td>
</tr>
<tr>
<td>&gt;20</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>Grade levels taught</td>
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<td></td>
</tr>
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</tr>
<tr>
<td>Infants/Primary</td>
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<td>14</td>
</tr>
<tr>
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<td>43</td>
</tr>
<tr>
<td>All grade levels</td>
<td>4</td>
<td>29</td>
</tr>
</tbody>
</table>

3.1.2 DHH students.

All students who were DHH within the ACT and were supported by itinerant teachers were eligible for inclusion in the study. This included students from both the public and the independent schools and DHH students with other disabilities whether they were enrolled in a special school, a special education unit within a mainstream school, or in a mainstream class. No DHH student was excluded because of educational or personal characteristics.
3.1 Participants

The 14 participating itinerant teachers provided services to 61 DHH students in schools across the ACT. For 59 of those students, the itinerant teachers provided anonymous information about the activities they used, and the influences on their choice of those activities. Two students were mislaid by the teacher before sealing the return envelope and were unable to be added later. Information about the general student population of the ACT and enrolment patterns of students with special needs in the ETD, independent and Catholic school systems is provided in Appendix D.

Figure 3.1.2a indicates the grade level of the 59 students for whom the itinerant teachers filled in the activities questionnaires. Notably, enrolment in a pre-school setting may last for two years, and support at a pre-school setting is limited to one hour for all students by policy.

The number of support hours and support sessions that the students received per week is shown in Figure 3.1.2b. The support hours range from the 58% of students who receive low support hours (0–2), 27% for mid-range hours (3–5.5), and 15% for high support hours (6–9). When these are calculated as percentages of the total teaching hours by the team of itinerant teachers (190.5 hours per week), 38% and 37% of the total hours were with students supported by high and mid-range hours respectively, and 25% with the students who received low hours per week. This is important to keep in mind when interpreting the results because it indicates that over two thirds of the comments and results relate to students who are receiving three or more support hours per week.
It should be noted that the itinerant teachers did not necessarily work full time and that some had other duties in addition to student caseloads, so that average itinerant teacher hours cannot be calculated from these values. The students received their support in sessions of at least an hour, and the range of the number of support sessions per week is also shown in Figure 3.1.2b. As illustrated, the number of support hours does not always equate with the number of support sessions.

**Figure 3.1.2b.** The number of students for each level of support hours and support sessions per week
3.2 Instruments

The itinerant teachers were surveyed with paper questionnaires as provided in Appendices A and B. Both were developed by means of: (a) a compilation of results from the Literature Review chapter of similar surveys, as summarised below; (b) modifications to allow for current Australian terminology; (c) extensions to include specific aspects of the research questions; and (d) feedback from three pilot trials of the questionnaires with itinerant teachers working in another Australian state.

3.2.1 The itinerant teacher demographics questionnaire.

An initial questionnaire was designed to collect demographic information about participants in order to examine whether participant characteristics influenced the choice of activities. The questionnaire required that the participants circle prescribed responses to four questions about: (a) years of experience; (b) qualifications as a teacher of the deaf; (c) teaching background; and (d) number of students. The latter question was to assist with matching these questionnaires with the itinerant teacher activities questionnaires.

The first three questions about experience and qualifications were similar to demographic questionnaire items used in earlier US and Australian research (Hyde & Power, 2004b; Luckner & Miller, 1994), and subsequently by Luckner and Ayantoye (2013). The questionnaire was piloted with itinerant teachers at the same time as the piloting of the itinerant teacher activities questionnaire, as described below. The piloting was used to fine-tune the wording to match Australian terminology for qualifications and teaching background and to fine-tune the social validity of the questionnaire. The responses to the first three questions were to be used to examine the nature of relationships between the
itinerant activities and the qualifications, experience, and background of the itinerant teachers.

3.2.2 The itinerant teacher activities questionnaire.

The itinerant teacher activities questionnaire was designed to collect detailed information about the activities used for each student on the participants’ caseloads. The first stage in the development of the questionnaire involved an examination of research on itinerant teachers and DHH students in mainstream schools in the US (Antia et al., 2008; Antia et al., 2010; Luckner & Ayantoye, 2013; Luckner & Howell, 2002; Luckner & Miller, 1994), in Australia (Hyde & Power, 2004), and in the UK (Archbold & O’Donoghue, 2007; Powers, 2002). Most of these studies had specific detail about different types of collaborative and consultation activities, but little detail about the nature of the direct student teaching that occurred (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994).

An initial list was made of activities from the research, listed immediately above, on the basis that the activity had been cited in at least one study or had been recommended as being important for DHH students in mainstream settings. The list consisted of consultative and collaborative activities, teaching the mainstream curriculum, and providing general school support, such as teaching literacy and study skills. Specialist teacher of the deaf activities used in integrated settings were added to the list. The specialist teaching activities included speech and language remediation and the development of auditory skills. Each teaching activity was named according to the specific student need they were addressing. The teaching activities included listening, speech, and language development
activities as identified by the literature review, and as recommended by Australian researchers (P. M. Brown et al., 2006).

The list of strategies was further expanded by examining the use of different strategies to address particular student needs. One such strategy used was teaching explicit skills, in contrast to integrating the skills taught with other skill areas. In addition, some activities such as teaching literacy, vocabulary, and academic subjects were considered as either being based on the class teachers’ programs or on the itinerant teachers’ programs. Teaching vocabulary was treated as a separate goal to language teaching because of the availability of specific research in this area (Luckner & Cooke, 2010), and because it was commonly listed as an important part of curriculum support. Conversation was also listed as a separate activity because of the evidence that it was a valuable strategy for facilitating language development, particularly for integrating and transferring explicitly taught communication skills (Luckner & Cooke, 2010). Separate options were also provided for teaching sign language and providing sign interpreting because of the evidence that many students who used signing were in mainstream settings, and because there was concern that their signing skills should be improved, in addition to receiving sign interpreting (Foster & Cue, 2009).

The category of direct teaching services, which was so commonly a single item in other studies in the literature, was thus replaced by 10 differentiated teaching activities. Terminology was selected for these new activities that specified the student needs that were targeted, the source of the program, and whether the activity was skill based or integrated with other goals. Examples of these include: *Teaching auditory skills separately with explicit targets*, *Teaching*
literacy with the class program, and Teaching speech. The latter refers to speech articulation remediation as distinct from spoken language development. Some of these specific teaching activities came from the researcher’s experiences and some from the piloting process. The two pilot questionnaires included an open-ended category, Other activity, which invited the itinerant teachers to list and describe a teaching activity they employed that was not already listed. Feedback from the two pilots with other itinerant teacher teams confirmed that the activities listed represented the full range of possible activities, and were immediately comprehensible to Australian itinerant teachers.

Two of the new activities referred to teaching based on language assessments because one research question required the investigation of the specific influence of language assessments. These teaching activities were termed: Teaching spoken language with explicit targets, and Teaching spoken language integrated with other activities.

Three activities from some of the prior studies were omitted, namely: driving time, preparation time, and assessments. The first two, of importance to questions regarding itinerant teacher workloads and teaching conditions, were not relevant to the current study, and in addition the time used was not necessarily connected with particular student or school influences but was a function of geography. Seeking to identify the amount of time devoted to assessments in order to examine the associations with particular student needs would have necessitated finer detail about which student need was being assessed. This was a conclusion drawn from an examination of the findings of a survey by Luckner and Bowen (2006), who demonstrated that itinerant teachers conducted a very wide range of assessments, related to the full range of student needs, but that speech
and language assessments were most often administered by speech and language therapists. Assessments for this study were deemed to be part of the teaching activity for the particular skill area being addressed. For example, the activity of teaching language included giving or consulting language assessments, whether the assessments were formative or summative tests, or observations.

**3.2.2.1 The piloting of the questionnaire.**

The first iteration of the survey was piloted with itinerant teachers from another Australian state with a similar itinerant teacher model to the ACT. The questionnaire asked the itinerant teachers to consider six hypothetical students who were described as having a range of clearly defined student needs and to match these students with the list of possible itinerant teacher activities. The aim was to elicit information about how itinerant teachers generally chose activities. This design was found to be too complicated and was invalid for some itinerant teachers. They indicated that they had been seeking the “right” or ideal answer (i.e., providing answers that would please the researcher based on the hypothetical descriptions). The itinerant teachers also found it difficult to assign time to the different activities because they integrated some of the goals in a single activity, and because they identified the need to provide opportunities to indicate clearly their participation in important but infrequent activities, such as review meetings. They also suggested the inclusion of some other itinerant teacher activities, including conversations with students.

The second iteration of the survey instrument referred to the current students taught by the itinerant teachers rather than hypothetical students. It included a first section that sought detailed information about the needs of each student, such as hearing loss, language ability, and other disabilities. The
questionnaire then asked the itinerant teachers to indicate their use of an updated list of activities. When this version was piloted with a new team of itinerant teachers, also in a different state to the target population of the study, the student needs section was found to be lengthy and complicated because it required itinerant teachers to access student files in order to provide their answers. In some cases, the language test results in the files were not understood and the resultant information was rendered invalid. The final list of itinerant teacher activities, by contrast, was well understood and more easily completed. The ability to complete the survey without difficulty was an important criterion for the development of this instrument because the study aimed to survey itinerant teachers representing the full range of experience and commitment, rather than a self-selected group of committed or experienced itinerant teachers.

The final iteration of the survey addressed the student needs issue by asking the itinerant teachers for very limited student information only, that did not require them to consult and interpret student files. More detailed student information was accessed by the researcher from student records. This final version of the survey instrument was piloted with a third set of itinerant teachers from yet another jurisdiction, and was found to be more readily and easily completed.

3.2.2.2 The final version of the teacher activities questionnaire.

The final questionnaire contained 22 possible activities that may be pursued by itinerant teachers and an option for the participants to include activities not listed (see Appendix B).

The final format was formatted onto the front and back page of a single page. One blank questionnaire was provided for each student on each itinerant
teacher’s current caseload. The front page requested numbers and percentages for four short questions and 22 teaching activities. The short questions asked for the student’s grade level, number of support hours being received, number of sessions of intervention provided per week, and the percentage of that support provided in the form of withdrawal sessions.

The rest of the front page of the questionnaire listed the 22 possible teaching activities and an Other activity (with an opportunity for description) section at the end to allow itinerant teachers to add activity categories not contained in the 22 available choices. Itinerant teachers were asked to indicate the relative percentage of use of each activity for that particular student, averaged over the whole school year. They were also asked to indicate if that activity was used in each session, and if not, to write the frequency of use (e.g., once per week, twice per year, etc.). The latter question was particularly relevant for quantifying the usage of infrequent activities, such as attending review meetings and presenting at a staff meeting.

The back page of the questionnaire had two free response questions that sought reasons for the choice of activities selected for the individual student documented on the front page. The first question asked about the influences on the choice of support activities for that particular student, and the second about the influences that restricted the amount or type of intervention/support that the itinerant teachers would like to provide in an ideal situation. A half-page space was provided for each written response. The written answers were to be used in conjunction with the analysed data from the interviews, focus groups, and student records to enable a triangulation of data sources to assist in ensuring the reliability and validity of the data collected (Merriam, 2009).
3.2.2.3 The details of the activities.

The 22 activities are listed below, using terminology accessible to Australian settings, with a brief explanation compiled from the literature review and the piloting process.

1. Teaching literacy/English, following the class teacher’s program:
Teaching reading and writing, and to a lesser extent, speaking and listening using the program, texts, and activities as set by the class teacher. “English” refers to secondary settings, and “literacy” to primary settings (language arts in the US). For example, teaching the class spelling list, providing assistance with home reading texts or class novels, or preparing class oral presentations.

2. Teaching your own literacy/English program for this student: Teaching using a program, texts, and activities selected by the itinerant teacher.

3. Teaching other subjects following the class teacher’s program:
Assisting with academic subjects other than literacy/English using the class curriculum, including mathematics.

4. Teaching other subjects with your own program: Teaching an academic subject, other than literacy/English, using a program or curriculum independent of the class curriculum. Common examples include the language of mathematics, teaching life skills, such as cooking, and teaching skills for passing a driving test.

5. Teaching study/organization skills: Teaching general study skills that could be used across academic subjects. This activity includes teaching the use of a dictionary, thesaurus, and computers and assisting students to organise themselves to complete assignments and projects.

6. Teaching the vocabulary of the class program: Teaching vocabulary specifically relevant to the current academic class program.
7. Teaching general vocabulary: Teaching vocabulary other than words from the class curriculum, either using sequences designated in a program, or reacting to misunderstandings by the student.

8. Note-taking in mainstream lessons: The itinerant teacher taking notes for the DHH student in a mainstream class.

9. Teaching speech: Speech remediation, including the habilitation of suprasegmentals and articulation features. It also includes assisting the student with the pronunciation of new vocabulary.

10. Teaching auditory skills separately with explicit targets: Using a program designed to develop specific auditory skills. This activity also refers to the use of materials adapted to the interests and language level of the student, but selected for a particular auditory skill level.

11. Teaching auditory skills integrated with other activities: Developing auditory skills without using a specific program, but using materials suitable for developing other skills as well.

12. Teaching oral language formally with explicit targets: The use of materials and strategies to develop specific aspects of spoken language development, including syntax and pragmatics but not vocabulary, using the itinerant teachers’ language programs.

13. Teaching oral language integrated with other activities: Developing oral language using materials and strategies suitable for other activities, such as the language needed for the class program or the language selected for the auditory skills program.
14. *Conversing with the student unrelated to the above activities:* Discussion that was not directly related to either the class curriculum or other skills.

15. *Teaching specific aspects of sign(ed) language:* Teaching to develop the capacity and complexity of the students’ signing.

16. *Providing sign interpreting (i.e., by you for this student):* The itinerant teacher interpreting for the student in class or in an extra curricula activity.

17. *Teaching a social/behavioural program:* Either teaching a prepared program to assist the student with social or behavioural skills, or providing related activities, such as assisting with social activities with other deaf students.

18. *Consulting/communicating with parents:* Formal and informal communication with parents, such as communication books, emails, and face-to-face meetings.

19. *Consulting/communicating with school staff:* Consultation with school staff apart from formal meetings and presentations as in Activities 21 and 22.

20. *Assisting with assistive listening technology (e.g., assistance with hearing aids, cochlear implants, FMs):* Assisting the students to use and maintain assistive hearing devices, most commonly with FMs.

21. *Presenting to school staff (i.e., in-service sessions):* A formal presentation to a staff meeting about issues related to the student.

22. *Participating/organizing school review/planning meetings:* Attending, and perhaps organising a meeting with school staff to plan or review programs and strategies.

23. *Other activities (describe):* An opportunity for the itinerant teacher to add an activity not covered in the above categories.
3.2.3 The codebook for examining student files.

Student files were examined in order to collect a wide range of data that could be individually matched with the activities used for the students. Appendix E contains the codebook used to record data from the student files (see section 3.3.2 for the data accessing procedure). The codebook included 50 separate data entry points including, for example, the hearing thresholds at four frequencies for both ears. These data points can be summarised as student demographics (age, grade level, gender etc.), student learning needs (i.e., audiological, language, other disabilities, and academic reports), school type, IEPs (termed ILPs in the ACT), and results from a formal student appraisal process required by the ETD.

The codebook categories were similar to those used in research involving DHH students in regular schools (Antia et al., 2009; Eriks-Brophy et al., 2012; Hyde & Power, 2004b; Powers, 2003), which involved examining student data relating to audiology, academic ability, communication, language, and other disabilities, as well as student reports and school-based IEPs, (i.e., Individual Learning Plans in the ACT).

A trial codebook was developed from a compilation of these studies and piloted with four of the target student files rather than with student files from another state. This was because different educational jurisdictions have different protocols for student files, so it was necessary to pilot the manual on the educational jurisdiction being examined. Information gleaned in the piloting was incorporated into the codebook design, and the piloted student files were re-examined with the updated codebook.

The main modification resulting from the piloting was in response to the presence in the student files of the formal reports of reappraisal and review
meetings, which are conducted by the ETD at seven designated points in the students’ school years. These reports consisted of codes recorded in three areas: focus areas, access areas, and participation areas. Specific codes were used in these latter two areas (e.g., Physical 3), and these codes determined the funding for teacher assistants as well as informing IEPs and other accountability requirements. Because these codes were available for many students, and were derived from documentation and professional discussion, it was deemed that they were valuable data that related directly to student needs, and hence were added to the codebook.

3.2.4 The schedule for the interviews.

Individual interviews were used to ask itinerant teachers about the influences on their choice of activities for different students. Interviews were chosen in accordance with recommendations by Guest, Namey, and Mitchel (2013), who suggested that in-depth interviews are the most useful methodology in examining the reasons for personal choices (see Section 3.3.3 for the interview procedures). A written schedule (Appendix F) was developed to guide the interviews using a semi-structured format. This format (Kvale, 2007; Mertens, 2010; K. F. Punch, 2009) was used because it enabled a rich description around itinerant teaching as well as providing focus on the research questions. The schedule contained introductory process questions, the main question about influences on the support activities, and the closing procedures. It also suggested a range of possible prompts and responses to maintain the conversational flow and to facilitate expansions and clarifications using neutral language (Kvale, 2007). The secondary research question about the linguistic needs of the students was
explored by proving a pre-prepared prompt (see Appendix F) if language ability was not raised spontaneously.

Other interview research with itinerant teachers had a larger range of structured questions (Luckner & Howell, 2002; Reed et al., 2008) but the purpose of this study was to examine all possible influences, and to allow the itinerant teachers to raise the issues themselves rather than pre-empt the influences and their importance by presenting them with a definite list of possible influences in a predetermined sequence.

The interview schedule was piloted using two itinerant teachers from another Australian state to find which strategies resulted in an easy flow of conversation related to the research questions. These pilots clearly indicated that itinerant teachers were more comfortable when speaking about actual students rather than discussing abstract concepts such as the influence of policy and systemic influences, or general discussions about the relative effect of the hearing or language abilities of the students. It was also found that a discussion of individual students, with prompts for expansion on possible influences as they occurred, was a successful strategy to elicit the required information, particularly when combined with brief summary and general questions at the end of the interview. In response to this feedback from the pilot, it was decided to have the completed itinerant teacher activities surveys available for the interviewees to refer to if they wished. In addition, in response to feedback from pilot studies of the surveys, a question was added to provide feedback on the process of completing the itinerant teacher activities surveys to check the validity of the values provided. For these reasons, the main part of the interview consisted of the itinerant teachers being asked to choose particular students and talk about the
reasons for the activities for each student in turn, using a conversational, open-ended style with probes for clarification and expansion (Bernard, 2009).

The final part of the interview schedule contained prompts for particular possible influences if they had not been already raised spontaneously. It also contained summary questions for the end of the interview and at natural section breaks. These questions were included to assist with analysis as recommended by Kvale (2009).

3.2.5 The schedule for the focus groups.

Focus groups were designed to extend, amplify, and partially validate the data from the individual interviews. The particular focus was on the influences on the choice of activities. The written schedule was thus similar to that for the individual interviews with the addition of stimulus material from an analysis of the individual interviews (Appendix G). That analysis was discussed with the team of research supervisors and then incorporated into the final schedule as part of a process that was designed to enable the itinerant teachers to comment on the summary of the thematic analysis of their individual interviews. This was a further form of “member checking,” which Guba and Lincoln (1989, p. 239) assert is the “single most crucial technique for establishing credibility” in analysis of such data.

The last question in the schedule, recommended by Kvale (2007), asked for the most important thing the itinerant teachers would like the researcher to know about how and why they chose their activities. This question was piloted with two itinerant teachers from another state and was proved to be highly successful in eliciting relevant information.
3.3 Procedures

3.3.1 Surveying itinerant teachers.

Following Human Research Ethic Committee (HREC) approval through the University of Newcastle (Appendix H) and research approval from the ETD (Appendix I), the itinerant teacher information pages and consent forms (Appendix J) were distributed in the context of a staff meeting. The researcher explained that participation was voluntary and detailed the procedures for protection of privacy and confidentiality with both the surveys and interviews. Written guidelines for these issues were also provided in the information and consent forms. All itinerant teachers had an opportunity to question the researcher at the meeting or privately using the contact details provided.

Both surveys were distributed at the same staff meeting, and returns were made via a secure return box placed in the staff room. The Executive Itinerant Teacher (i.e., the service manager) assisted in labelling the returns with the designated itinerant teacher code (e.g. Itinerant teacher A, B, C, etc.), using an envelope-within-an-envelope system to protect the privacy of the itinerant teacher as described in the HREC application (Appendix H). The coded envelopes containing the consent forms and surveys were collected by the researcher, opened, and then digitised and stored securely.

3.3.2 Accessing files.

Details about the consent elicitation procedures are outlined in Appendix K titled Procedures for maintaining privacy and confidentiality and for matching student data with itinerant teacher surveys. These procedures relate to protecting the privacy of the student information and obtaining informed consent as approved by the HREC of the University of Newcastle, approval number H-
2012-0002 (see Appendix H). A separate approval letter from the ETD is provided in Appendix L.

The procedures included a mailed cover letter to the homes of the students from the ETD (Appendix L), followed by the information pages and consent forms to students 18 years of age and over and to parents or caregivers (Appendix C). The letters requested consent for the student record files to be accessed.

A stamped-addressed envelope was provided for return of the consent forms. The executive of the itinerant teacher service then sent out a reminder letter after one month (Appendix L). Upon receipt of the consent they kept a secure list of students for whom consent had been provided. This list was converted to list of de-identified student codes (e.g., Student K1, where that student was associated with Teacher K) and destroyed upon completion of the data collection.

The student files were kept in secure filing cabinets in the staff room at the ETD itinerant teachers’ centre. The researcher read through the student files in the staff room under the supervision of the executive itinerant teacher. Codes for data were written into blank recording pages based on the codebook; no electronic copies were made of any material. The completed record pages were taken from the staff room and the data digitised and securely stored.

Appendix K contains full details of the process approved by the University of Newcastle HREC for matching the student record data with the surveys and interviews through use of codes to preserve privacy and confidentiality. This process resulted in a letter code for each itinerant teacher, A through to O, excluding N to avoid transcription errors, and each student received a number and matching letter, for example Itinerant teacher A worked with students A1 – A3.
3.3 Procedures

Each questionnaire, interview, focus group comment, and student record was identified by these codes.

3.3.3 Interviewing itinerant teachers.

The researcher interviewed each itinerant teacher who had given specific written consent for individual interviews, in a location selected by them where they felt most at ease, in accordance with recommendations from Green and Thorogood (2004) and Kvale (1996). The actual locations included cafes, homes, and the staff meeting room at the itinerant teachers’ centre and lasted for up to an hour. Both the individual interviews and the focus groups were audiotaped using an Olympus digital voice recorder (model VN-711PC).

Ten participants agreed to take part in focus group sessions to further explore the ideas raised in the interviews. Stewart (2007) suggested that the ideal size for focus groups be no larger than eight, therefore it was decided to have two groups of five members each. Focus groups of approximately an hour were conducted in the itinerant teachers’ meeting room at a time convenient to the participants, beginning a week after the completion of all individual interviews. The two focus groups were created using random selection to assign participants to different groups a week apart.

3.4 Initial Data Management

This section describes the chronological sequence of data gathering rather than the sequence of the analysis. The surveys were conducted first, but analysed last, together with the data from the student files. This allowed the interviews and focus groups to be conducted and then analysed without influence from the qualitative results. This separation of data gathering also provided independent but complementary data for integration after analysis.
The completed surveys were scanned and the digital copies securely stored at the University of Newcastle. The back page of the itinerant teacher activities survey, which contained handwritten answers to two questions, was typed and saved as an electronic file. Those written answers were qualitatively analysed together with the interviews and focus groups, as outlined in Section 3.5.

All data from the 14 completed itinerant teacher demographic surveys and the front pages of the 59 itinerant teacher activities surveys were entered into Excel spreadsheets and then imported into SPSS 20 and recoded for analysis.

3.4.1 Itinerant teacher demographics questionnaire.

Ordinal codes were used for itinerant teacher qualifications and experience, and a nominal code was used for the teaching background of the itinerant teacher prior to beginning itinerant teacher work. The number of students and the total number of student hours provided were also coded. Summary statistics were calculated from this data, and correlations were used to examine the association of the itinerant teacher activities with itinerant teacher backgrounds, qualifications, and experience.

3.4.2 Itinerant teacher activities questionnaire.

The four general student data items were coded directly into SPSS as grade level, support hours, support sessions, and percentage of withdrawal time. Summary statistics were then calculated, as reported previously about the participants. These data were also used to examine correlations with data about the itinerant teachers, the learning needs of the student, and the itinerant teacher activities.

The rest of the front page of the questionnaire contained data for each of 22 activities, which were coded in two ways: (a) as a frequency measure; and (b)
as a measure of the proportions of time used. These measures were simplified and evaluated for use in describing and categorising the activities, and for examining the relationship of those activities to student and itinerant teacher variables.

A first simplification involved recoding the activity item *Other activities*. That item allowed itinerant teachers to write activities that did not fit earlier categories. The actual entries are recorded in Appendix M together with the way in which they were recoded. Most of these were deemed to be part of earlier categories, such as “Doing a Ling 6 sound check,” which was recoded into *Assisting with hearing technology*.

A few itinerant teachers used the *Other activities* section to describe observing the student or conducting formal assessments. When the survey was initially compiled, assessment was deemed part of the strategy of addressing each student need (see discussion in Section 3.2.2), so the few values for assessment or observations were recoded into the activities related to the student abilities being observed or assessed. The process of importing from Excel to SPSS introduced the possibility of transcription errors, so these data were repeated by two research assistants until 100% agreement was achieved.

**3.4.2.1 Frequency measures.**

The frequency of use of each activity was recorded as either every session or as a number per a specified time period (i.e., per week, per term, per semester, or per year). Those numbers were all converted to frequencies per year using the implied understanding that the Australian school year has four school terms or two semesters, which equates to 40 weeks. All the frequencies were thus converted to a number of instances per year in order to allow further analysis and reporting. For example, if a student received *Teaching using conversation* in
every session, and there were four sessions a week, then four was multiplied by
the 40 weeks of a standard school year, and 160 instances was recorded for the
frequency of this teaching activity per year. Large values such as 160 for some
activities were in contrast to values for activities such as *Presenting to the school
staff*, which might have occurred just once per year. These smaller but possibly
significant values were not obscured by the larger values because they were
examined and reported using the fine-grained analysis described in Section 4.7.

The 22 itinerant teacher activities therefore had one frequency data point
for all 59 students. Those data were summarised by calculating the mean
frequency and standard deviations for use of the activity each year. A further
calculation provided the proportion of students who received each activity over
three time periods: at least once a year, at least weekly, or during every itinerant
teaching session. The first time period was particularly useful for the description
of infrequent activities.

3.4.2.2 Time measures.

Proportions of time for each activity, averaged over the school year, were
estimated by the itinerant teachers and recorded as percentages. This was prepared
for coding by recalculating the percentages, if necessary. Itinerant teachers had
been asked to indicate the percentage of use of each of the activities, averaged
over the whole year. In theory, the totals for individual activity time allocations
should have been exactly 100%. However, in order to assist the participants to
easily complete the surveys, they were instructed to focus on ensuring that the
relative proportions of time allocation were correct in their estimation. When the
total for all time allocations exceeded 100%, then that total was used as the
denominator for a new calculation of relative time allocations (i.e., so that the new
total did equal 100%). All percentages (i.e., original or adjusted) were recorded in the Excel spreadsheet.

Other data recording conventions used in regard to allocation of time measures to activities by participants included recording a zero when there was a blank in the percentages column. Because participants were not required to fill every space, a blank meant that that particular activity was not used with that student. An exception to this was when there was a frequency recorded in the frequency column, such as twice a year, but there was a blank in the percentages column. This happened with activities such as *Attending review and planning meetings*, which most itinerant teachers recorded as a very low percentage, either 1% or 2%. The frequency response was evidence that there was at least some time used over the year, and therefore a nominal 1% was recorded in the percentages column if it had been left blank.

As a consequence of the procedures outlined above, each teaching activity had one data point for each student, measuring the estimated time proportion used for that activity. Means and standard deviations were calculated to describe the support time used for each activity across all participants. In order to further describe activities that were used with a small number of students, such as *Teaching signing*, another statistic was calculated. The support time was averaged, but only for those students who received the activity. This new average was reported separately for every teaching activity for comparison with the means calculated across all students.

Hours and minutes were not used to summarize times used for different activities, in contrast to other studies (Hyde & Power, 2004b). Because several itinerant teachers worked part time, percentage of support time was found to be a
more appropriate measure than actual time (i.e., hours) for comparing allocations to different activities. As an example, 15 minutes per week checking hearing aids represents 25% of the support time if the student received one hour a week of itinerant teacher support, and 4% if the student received six hours support per week. Also, interpreting the importance of an itinerant teacher spending an hour a week checking aids depends on whether the itinerant teacher sees 4 or 40 students in that week. These clarifying details were not available in some other studies (Hyde & Power, 2004b). In the current study, percentages of support time were used to facilitate accurate comparisons of time allocations among different students and itinerant teachers.

3.4.2.3 Reliability processes.

There were differences in the reliability of the two measures, frequencies and time proportions. Triangulation of the data with the interviews revealed concerns about the reliability of some of the time proportion estimates made by the itinerant teachers, especially when their judgments related to infrequent activities such as Attending review and planning meetings. Some itinerant teachers spoke about the difficulties of estimating time for infrequent activities and also the difficulty of trying to make the percentages add to 100. They also spoke, and wrote on the surveys, about whether they should have counted activities conducted outside of the allocated support hours, such as catching up with mainstream teachers during morning tea.

Another possible source of inaccuracy with allocation of time proportions was encountered when some activities were conducted in conjunction with others (e.g., in Teaching general vocabulary and Teaching the vocabulary of the class program). Several participants expressed concern in the interviews and pilot
studies about how to accurately describe the division of their time between two or three coincidental activities. In contrast, the itinerant teachers were confident of their reporting that a particular activity was used weekly or at each session, especially when they did not have to apportion the time between the activities.

In the context of these reliability concerns with the time proportions, only the frequency measures were used for further association statistics, and the time proportion measures were used to provide summary statistics for description purposes. This choice was further validated by a comparison of the results of exploratory factor analysis for both measures. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.73 for the frequency measures, (i.e., deemed adequate for factor analysis), but was only 0.11 for the time proportions, indicating that these time proportion measures were unsuitable for factor analysis.

3.4.2.4 Categorising the activities.

The first research question (1a) asked for a categorisation of the activities. Categories would assist with describing the activities, and could also facilitate further statistical analysis to answer the second question regarding the influences on the activities. Composite activities were thus formed by adding two or more functionally similar individual activities using the transform function of SPSS. Types of activities were also formed by examining the 22 activities for an underlying principal factor structure.

Composite activities were formed by selecting subsets of the original activities using theoretical principles such as combining functionally similar activities. The resultant composite activities included the pairs of activities for developing listening skills, vocabulary, and language; the two types of signing support; the four consultation and collaboration activities; the two activities
specifically requiring signing; the four activities for teaching audition skills and
spoken language; and the activities based on the mainstream class program. Other
combinations were based on the possible influences, such as itinerant teacher
qualifications and the strategies recommended by proponents of auditory/verbal
therapy. The SPSS transform variable function was used to add these different
combinations of individual activities in order to provide composite measures of
frequency and time for further description and analysis.

Exploratory factor analysis (EFA) was used with the weekly frequency
measures of the 22 itinerant teacher activities in order to reduce them to a simpler
variable structure. The principles and preliminary test results are presented here,
with detail about the factors to be presented in Section 4.4.2.2. Initial testing
showed that the data were suitable for factor analysis. The Kaiser-Meyer-Olkin
measure was .73 and Bartlett’s test was significant (p < .001). Even though
Principal Components Analysis (PCA) is frequently used for EFA, a Factor
Analysis (FA) based approach was preferred to avoid an overestimate of the total
variance explained with using PCA due to including all the variance in the
variables. This is because a FA-based approach includes only the shared variance.
Examination of the distribution of the variables indicated multiple violations of
the assumption of normal distribution; 14 items had a skew value greater than
two, and 8 had a kurtosis value greater than 7. Principal Axis Factoring was
therefore used in preference to Maximum Likelihood.

Before extraction, the communalities were examined and activities with
low communality were excluded. A scree plot was used to judge the number of
factors to extract. That number was further confirmed by examining the pattern
matrix when extraction was used for factors below and above that value. Some
correlation between factors was expected, therefore Oblimin rotation was used to
determine a stable pattern structure. This decision was reviewed using the factor
correlation table. Activities that did not have high loadings with stable factors
were retained as separate variables. The resultant factors and the retained separate
activities were then termed *types of activities* and used for further correlational
analysis.

Chapter 2 Literature Review indicated, however, that one of the limitations
of past research was that categorising some activities may have obscured
important detail (see Section 2.2), in particular detail about direct teaching
activities. Consequently, the original detail of 22 activities was retained for
statistical analysis, together with the types of activities and the composite
activities.

These two methods of data reduction provided crosschecks on the validity
of each method. They also provided alternative ways to manage the full data set.
The types of activities provided by factor analysis were a mapping of the original
22 activities onto a smaller set of activities. The composite activities were
subsamples of the 22 activities that were not necessarily mutually exclusive. Both
were also used to answer the research questions about how to describe and
categorise the activities of itinerant teachers, and to enable an examination of
associations with influences from student needs and external influences, such as
itinerant teacher characteristics.

### 3.4.3 Student files.

The data codes from the 28 student files were recorded by hand into a
blank pro forma using the codebook (Appendix E). These codes were transcribed
from the record pages into an Excel spreadsheet and then imported into a SPSS
A number of the original codes were condensed or transformed into bivariate codes for further analysis as described below.

The original audiological data included unaided thresholds for each ear at four frequencies. These data were converted to two variables, the mean hearing loss in the better ear, and the category of hearing loss. The categories used were those commonly used in Australia for normal (0–20dB) mild (21dB–45dB), moderate (46dB–60dB), moderate/severe (61dB–75dB), severe (76dB–89dB), and profound (>89dB), as available in the results. The type of hearing loss (i.e., conductive, sensorineural, or mixed) was coded, along with the use of various assistive hearing devices, and requests for assistance for using the FM, and for dealing with poor room acoustics.

Language mode, gender, and age were coded, but because student grade level was available for all 59 students, it was used instead of age, as this was judged to have more influence on teaching activities than age. The first year of formal schooling in the ACT is called kindergarten and was coded as zero grade level, with subsequent grade levels being coded from 1 to 12. The government provides for a possible two years of pre-school education prior to entry into school (i.e., kindergarten) and itinerant teachers work in those preschools. Grade level for those students was coded as -1. Grade level was also recoded into four categories according to the ACT system: preschool, primary (0–6), secondary (7–10), and college (11, 12).

Student educational needs were coded for language, speech, and listening skills. The latter two areas were placed into three categories based on documented evidence in reports and programs other than the IEPs: (a) no need; (b) mild need; and (c) high need.
A similar process was used for coding language ability for each student except that four ordinal categories were used instead of three, and standardised test scores, when available, were carefully recorded. Receptive and expressive language scores were averaged to provide a measure of total language ability, expressed as a percentile. Extensive language details were available for most students, including standard scores, language ages, percentiles, and descriptions of samples and observations, but the range of tests and testers created some concerns around consistency and the capability of making valid comparisons. Instead of using actual scores, four categories were used, with the relevant percentiles as follows: (a) high average and above for percentiles 50 or higher; (b) low average for percentiles 18–49; (c) mild delay for percentiles 17–5; and (d) moderate/severe delay for percentiles less than 5. Of the 28 students, 19 had standardised test results that allowed objective assignments to these categories and one student had insufficient information to allow a reliable classification. For the other eight students the researcher, who was qualified and experienced in language assessment, used the available documentary evidence to assign the students to the four categories. Other aspects of language testing were coded in more detail in accordance with the research questions. A nominal code was used to record a range of information including whether language test results were available, the category of the tester, the name or type of the test, and the date of the test administration.

Similar processes were used to assign students to three levels for academic ability, literacy ability, and ability in other academic areas. Pre-school students were coded as pre-schoolers, and the other school students were categorized as: (a) working below grade level; (b) at grade level; or (c) above grade level in these
three areas. If there was another diagnosed disability, it was coded as *Cognitive*, *Visual*, or *Other* noting that in the latter case the actual disability was recorded separately. Some students were reported to have another disability but without a formal diagnosis; this was termed a *Described other disability*, coded by yes/no, with the name of the disability recorded. ESL was coded yes/no. Students who came from homes where signing was their home language were coded as having an ESL background.

Eleven nominal variables were used to code the ILPs of the students, beginning with yes/no for the availability of the ILP. The other 10 variables were coded as yes/no relating to the presence of requests for assistance with the following: literacy, other subjects, study skills, vocabulary, auditory skills, speech, language development, FM use, staff consultation, a social/behavioural program, and cognitive skills.

The last 19 variables were available for only 10 of the 28 students because student appraisal meetings were held only biannually or at significant transition years. The reports of these meetings contained a list of focus areas, and codes for participation and access in the areas of language, audition, social skills, speech, curriculum, communication, and literacy and numeracy. The actual codes reported in these meetings were recorded, and the focus areas were transcribed.

The final list of student characteristics used for SPSS is available in Appendix N. It contained student data from the 59 itinerant teacher activity surveys related to grade level, number of support hours and support sessions per week, and the percentage of support provided in a withdrawal setting. It also contained extended student information from the student files for the 28 students where permission was obtained. The resultant data set was used for summary
descriptive statistics. The frequencies of both the 22 itinerant teacher activities and the 11 grouped activities were correlated with student characteristics. When the student data were nominal, biserial correlation coefficients were calculated. When nominal variables were examined for their relationship with each other, cross tabulations were used and Chi-square statistics calculated.

Further fine-grained analysis (see Section 4.7) was needed to deal with the high variability associated with a small population study. Fine-grained analysis involved examining frequency tables for outliers and for high or low frequencies, and similarly for time measures. Students identified by this process were then matched with interview and written comments. This fine-grained analysis was also conducted by consulting distribution tables, box and scatter plots, and original data points and questionnaires. This process was used for low frequency activities where the identification and examination of outliers assisted with explanations. It was also used with high frequency activities to explore the exceptions in order to verify possible generalisations. This detailed analysis was able to be integrated with the results of the thematic analysis of the qualitative data from the back pages of each activities questionnaire, and from interview comments. The results of the thematic analysis will be presented in the following section.

3.5 Qualitative Analysis

The second research question asked for the influences on the choice of activities by itinerant teachers. The itinerant teachers provided direct answers to this question in: (a) their written responses on the second page of the itinerant teacher activities questionnaire; (b) their individual interviews; and (c) the focus group interviews. The goal of the qualitative analysis of these three types of
material was to provide a summary description of the influences as reported by the participants. Briefly, the answers were transcribed into Word documents and then qualitatively analysed by assigning sections of the itinerant teachers’ words into themes (i.e., coding). *Themes* in this study refer to individual influences.

Further analysis sought *groups* of the influences. *Key findings* were developed concurrently with the influences and groups of influences, and refer to higher order descriptions that integrated individual influences and groups of influences.

The theoretical context of the analysis will be discussed first, followed by the methods used to prepare and analyse the material.

### 3.5.1 The coding strategy.

Grounded theory analysis, as described by Strass and Corbin (1998), was used to answer the question as to the range of influences on itinerant teachers’ choice of teaching activities. This included the use of open coding to develop the initial themes, and constant comparative analysis to refine the themes. The literature review had indicated that a possible source of influences was policies and role beliefs of the participants. Accordingly, the additions to grounded theory proposed by Denzin and Lincoln (1994) and Charmaz (2006) were also used, because they emphasised the meanings ascribed by participants. For this reason, attention in the analysis was given to references to views, values, beliefs, feelings, assumptions, and ideologies of the different individuals involved. Examples of themes concerning meanings include: *Itinerant teacher’s own understanding of role*, and *To foster independence*. Other suggestions by Charmaz (2006) included attending to factual statements about the experiences of the itinerant teachers, and school and family stakeholders. Examples of themes about such experiences include: *To adjust to a student alienated with school*, and *Room distractions*. 
Charmaz (2006) also suggested that memos contribute to analysis by encouraging flexibility to follow leads by means of successive engagement with the data. Memos refer to short notes typed separately from the text, but linked to the themes that precipitated the memo. Memos were used throughout the analysis to guide the different phases and to assist with researcher critical self-reflection. During the reading and preparation of the interview and focus group transcripts, the researcher wrote memos on the research process and the connections of the data to the research questions and emerging themes (Charmaz, 2006). These were used to refine the interviewing process and to aid later analysis (Guest, MacQueen, & Namey, 2012). They also contributed to internal and external validity by assisting the researcher to reflect on the process and content (Merriam, 2009). As an example, one memo documented that the direct questions in the first four interviews about the influence of policies led to puzzled silences, and interrupted the already established easy flow of conversation. This question was omitted in subsequent interviews and instead the issue was probed when it emerged in other conversation.

Some elements of narrative analysis (K. F. Punch, 2009) were used in the final coding phase to examine the tone used with some of the influences, such as when itinerant teachers referred to the relative importance of a particular influence such as “our core business” or their own feelings about the level of difficulty of a restrictive influence, “awful room acoustics”. The basic analysis, however, focused on the content as it directly related to the research questions.

The full-grounded theory approach, as developed and outlined by Strauss and Corbin (1998), was not used because the study was not seeking a new theory to explain this topic. Rather, the study sought to describe a range of influences on
itinerant teacher activities and the connections between those influences. Also, the literature review was used to develop some *a priori* themes (i.e., ungrounded theory), a process that was undertaken before any data were collected.

A further departure from grounded theory related to the data collection strategy itself. The grounded theory process of data collection involves repeated stages of data collection and data analysis, with each subsequent section informed by the earlier section, leading eventually to theoretical saturation (Strauss & Corbin, 1998). This was true to some extent with this research because there was some refinement when the written comments and interviews were recoded using new themes and refined themes from the focus interviews. In this way some theoretical saturation was achieved, which aided reliability because the recoding ensured that new information did not change the regularities that had emerged from the earlier coding (Mertens, 2010).

### 3.5.2 Transcribing the interviews.

The recordings were transcribed by a professional transcription service using guidelines suggested by Guest, Namey, and Mitchell (2013, p. 308). The resultant transcript named and used a different style for interviewer and interviewees; typed nonverbal sounds in parentheses such as laughs, sighs, and groans; and indicated if there were interruptions. Filler words such as *um* were transcribed when said by the interviewee. Inaudible segments were highlighted and time stamped to enable the researcher to review that section. The researcher listened to the marked inaudible sections and clarified them wherever possible. If they were still inaudible they were marked as such in square brackets.

The researcher read each transcript to check the transcription accuracy, particularly for idiom and jargon. Male pronouns were changed to female and
proper nouns were changed to anonymous terms such as [school name] for the purposes of protecting privacy. These privacy precautions were particularly necessary because of the small number of itinerant teachers, students, and schools in the ACT.

Each interviewee’s name was changed to a pseudonym beginning with the letter of the itinerant teacher code (e.g., itinerant teacher B was called Betty) and participating students were assigned a code (e.g., B1 for the first student of Betty). The interview was then imported into the computer assisted qualitative data analysis software program QSR Nvivo10. Initial analysis, hereafter referred to as coding, was used to segment and classify the written text, and these classifications were termed themes (Attride-Stirling, 2001). The names of the themes were chosen to unambiguously refer to a particular influence on the choice of teaching activities, poor world knowledge.

Interviewees had the option of requesting a copy of their interview for checking. Only two made that request and those were duly sent and checked, with no modifications requested. In accordance with the requirements of the ethical review process, the audio recordings and transcriptions will be securely stored within the University for at least five years, whereupon paper copies will be shredded and digital data deleted.

3.5.3 Procedures for inter-coder reliability.

A codebook (see Appendix O) was developed that was initially used to code the written material and two interviews. It was refined by coding the remaining eight interviews, and then used to recode all previously coded material and the focus groups. The codebook used the format suggested by Macqueen,
McLellan, Kay, and Milstein (1998) of including the name of the theme, a brief description, the inclusion and exclusion criteria, and sample passages.

A research assistant familiar with the terminology and idiom used by itinerant teachers, due to extensive experience in the field, completed the inter-coder reliability check. The research assistant was first trained in the use of Nvivo (QSR, 2012) and gained familiarity with the themes and their definitions. She was then asked to code half an interview, using themes only. This coding was compared to that of the researcher, who identified the areas of disagreement related to theme definitions and the standards for the length of text to be coded. A matrix-coding query from the Nvivo (QSR, 2012) software enabled areas of agreement and disagreement to be readily identified, examined, and reviewed through use of calculations of both percentage agreement and Cohen’s kappa. This process was repeated, and finally the research assistant coded a further two full interviews with the revised codebook (Appendix O).

The coding of the research assistant amounted to 30% of the interviews and this was compared with that of the researcher, and a final kappa coefficient of 0.82 was achieved for the final two interviews. A kappa coefficient over 0.75 is taken to indicate excellent agreement (Multon, 2010, p. 628). This value indicated that another researcher familiar with the terminology used by the itinerant teachers in the ACT would be able to use the codebook to code the interviews in a substantially similar way to the researcher, with similar lengths of text coded to the same themes.

Cohen’s kappa was used instead of percentage agreement because it is a more rigorous and conservative measure than percentage agreement, because it takes into account agreement that can occur by chance. For example, if two coders
do not code the introductory and closing remarks because it is irrelevant to the research questions, the percentage agreement may be high, but the kappa coefficient would be low. The kappa coefficient thus indicates the extent to which the references are coded to the same themes.

3.5.4 Coding content into themes.

The material was analysed chronologically, so the written responses were coded first, then the interviews, followed by the focus groups. Lengths of text ranging from phrases to a set of interchanges were coded into themes that were descriptive and directly related to reported influences on the choice of activities. For this reason, influences will be used hereafter to refer to themes. The software allowed segments to be multiply coded in overlapping lengths and for the researcher’s words to be eliminated so that they were not considered in frequency counts. The list of influences used for coding included: (a) predetermined influences; (b) influences added as new answers were encountered, using the words of the participants (i.e., “in vivo influences”); and (c) influences developed by refining—by both coalescing and subdividing—existing influences. A final list of influences was developed and previously coded data were recoded with the modified set of influences.

Predetermined influences came from the research questions, the literature review, the piloting of surveys and interviews, and the personal experience of the researcher as an itinerant teacher. Influences that were progressively added to the predetermined influences were a form of open coding as described by Glaser and Strauss (1967), and these in vivo codes were developed using the 12 strategies suggested by Ryan and Bernard (2003). These included (with examples in parentheses) paying attention to repetitions (teaching for independence),
similarities and differences (literacy with own or class teachers’ programs), indigenous categories (large gap), metaphors (tuned out), linguistic connectors such as because, and missing data. Identifying missing data was an important strategy because the absence of a reference to a possible influence could indicate significance, as was the case with policy.

Refinement of the influences used tactics suggested by (Miles & Huberman, 2002). These tactics included using contrasts and comparisons, similar to the “constant comparison method” of Glaser and Straus (1967), whereby each segment was compared to those around it and to those in related categories in order to identify what the data were examples of or what it represented. For example, the mention of hearing loss required examining the context to check whether it referred to difficulties hearing in the classroom, the use of an assistive hearing device, or the need for listening skills training.

Further refinement of the influences came from a natural break in the interviews between the first six interviews conducted in the last term of the school year, and the last four conducted early in the next year. Some new influences were added to the codebook from the final four interviews, including reactions to the Strauss and Corbin (1998) axial coding questions of who, when, where, why, and how. For example, asking why some students received subject teaching using alternative curriculum materials led to the influence students tuning out of classwork. Another example was from asking who received explicit language teaching, which led to the influence of students with high language needs. Text was now able to be coded to multiple influences, with linkages established between the earlier influences and those responding to the questions—hence the use of the term axial (linking) questions.
3.5.5 Groups of influences.

Initial coding of part of the first two interviews by the researcher led to a large number of text segments coded to influences from the student, school, and class teacher. These three influences were quickly subdivided as further detail emerged. For example, *student needs* was subdivided into *student communication skills, academic outcomes* and *literacy abilities*. *Student needs*, however, was the first group of influences to be identified, and other groups were identified concurrently with the refinement of the influences. The groups were meaningful units using inferential or abstract terminology (K. F. Punch, 2009) and reflected the patterns or relationships between the themes. The Nvivo software enabled coded segments to be easily re-examined with easy access to the context surrounding the segment. In this way the researcher was able to be continually close to the data by constantly referring to the larger context of each reference, as recommended by Merriam (2009). For example, all segments coded as *student communication skills* could be re-examined, using the surrounding context, to check if they referred to speech teaching, teaching of sign, or using written English. The nature of the student and school setting could also be checked for each instance of this theme.

These groups were now available for the last stage of thematic analysis, but were also able to be quantified for explaining and illustrating later quantitative data from the surveys.

3.5.6 Selecting key findings.

The extraction of key findings began after the first six interviews and was greatly advanced during the analysis of the focus groups as the itinerant teachers reacted to the influences and groups presented to them. These key findings—a
higher level of abstraction from the groups—were necessary because the groups by themselves do not tell the whole story, there is more to the phenomenon of influences on itinerant teaching than the groups of influences (Merriam, 2009).

Some initial influences such as the influence of parents were overwhelmingly supported by the itinerant teachers and thus became key findings in themselves, rather than being subsumed into other influences. Other key findings developed as a way to link and integrate some influences and groups, such as the use of conversation to both assess and develop language skills. Still others were from influences that were mentioned spontaneously and decisively by all itinerant teachers, such as room acoustics, even though they were only briefly discussed.

This development of the key findings, while at the same time retaining groups and basic influences, was assisted by a set of guidelines suggested by Guba and Lincoln (1989) to ensure that the final set of key findings comprehensively represented the data, and at the same time brought insight from the earlier coding and analysis.

A last refinement was made after coding the focus groups. The key findings were added to the list of influences, and these influences were then reapplied to the written responses and the individual interviews in order to assess the validity of the key findings. This refinement was guided by the principles of Merriam (2009), who suggested that the influences, groups, and key findings should be: responsive to the purpose of the research; exhaustive of all relevant references; sensitive and descriptive of the data; mutually exclusive; and “conceptually congruent so that they are at the same level of abstraction” (Merriam, 2009, p. 185).
As Merriam (2009) indicated, some groups could be conceptually congruent but could also contain influences that were not strictly mutually exclusive. A text segment could thus be coded into the relevant influences, but if it also linked these influences then it was a potential key finding. Influences that had a similar high overlapping potential were candidates for identification as key findings as described by K. F. Punch (2009) and Mertens (2010).

Some elements of narrative analysis as outlined by K. F. Punch (2009) were used to examine the pattern of key findings at this final stage. A number of thematic analyses of influences had used dichotomous categories to organise their influences, such as (a) facilitators or supports as opposed to (b) detractors, barriers, or obstacles (De Bortoli, Arthur-Kelly, Foreman, Balandin, & Mathisen, 2011; Eriks-Brophy et al., 2006; Reed et al., 2008). This approach was not used with these influences because, with the exception of classroom acoustics, the other influences were viewed as legitimate but competing influences, and the itinerant teachers saw that their task was to manage them. This is similar to the approach of Charmaz (2006), in that the focus is on how the individuals make sense of their work, in this case how they managed the range of influences. The content analysis of the data sources was rechecked in the light of the balancing strategies identified as key findings. An example of a key finding identified by these strategies was integrating activities (attending to two or more student goals at the same time).

This identification of overlapping groups and influences was assisted by using Nvivo software (QSR, 2012) to run matrix coding queries to identify references that were coded into more than one category. As an example, the use of conversation was checked against a range of student needs, as was teaching for
independence, engaging and interesting the students, integrating activities, and the role definition of the itinerant teacher. It was also possible to compare the grade level of the student and the type of school to see how they interacted with other influences.

In summary, a list of basic influences was developed and refined by reapplying new influences to the earlier coded material. Concurrently, groups of influences were developed to simplify the descriptions of the influences and enable them to be summarised. Also concurrently, key findings were developed, consisting of some individual influences and groups, which were chosen because they either linked strongly supported influences, balanced competing influences, or because they reflected influences that could not be subsumed into higher order abstractions.

Each relevant text segment was thus tagged as an influence, group, or key finding, often with multiple tags, and these tags related to perceived influences by the itinerant teachers on their choice of activities. In addition, each of these influences was also able to be identified according to the source of the material (i.e., written or spoken), the participant code (e.g., B), and quite often the student code (e.g., B2), and the activity discussed (e.g., speech teaching). This material was now available for summary and fine-grained descriptions of the influences on itinerant teacher activities.

3.5.7 Integration of quantitative and qualitative data.

Two processes were used to integrate both categories of data: (a) fine-grained analysis using original data; and (b) quotes from the itinerant teachers to illustrate major influences.
First, fine-grained analysis that integrated both qualitative and quantitative data was used to examine exceptionalities using the matched student codes. Factual details from interviews and written responses were used to explain anomalies and patterns in the quantitative data, such as the reasons for the use or non-use of certain activities with particular students. It should be noted that this was a total population. There were no attempts to omit unique cases, and no exclusions of itinerant teachers, students, or schools. This resulted in complex and unique situations, which may have been overlooked by a study that used summary results of homogeneous samples. In order to accurately report this data, individual comments were used to confirm and explain the statistical results.

Second, out of respect for the participants, interview data were selected and presented at key points so the itinerant teachers could speak for themselves, to allow other itinerant teachers to possibly identify with the sentiments expressed, and also to return to original data to add weight to the summary generalisations.

3.6 Summary

In accordance with the first research question, the support activities of all ACT itinerant teachers were surveyed and analysed, resulting in a detailed list of activities, as well as an examination of different ways to measure, describe, and categorise the activities. The activities included direct teaching activities and indirect support activities. Rich detail on individual activities was also collated from coding of the textual and spoken words of the teachers.

For comparison with the activities, in accordance with the second research question, possible influences on the choice of activities were identified, summarised, and described. The influences were examined from an analysis of data from student files and from both questionnaires. Rich detail related to
potential influences was also made available from thematic analysis of qualitative material.

Both sets of data, activities and potential influences, were examined for their association with each other using correlational and descriptive statistics and verified by the findings from thematic analysis. In addition, fine-grained analysis of individual teacher comments and quantitative data was used to understand the exceptionalities and smaller patterns. Individual comments and examples were selected to illustrate the results.
Chapter 4 Results

The preceding chapter outlined the methods used to gather and analyse data from three sources—interviews, student files, and questionnaires. The first three sections of this chapter will present the summarised results of the initial analysis, and describe how the data was further refined to answer the research questions. The results of the data sources will be presented in the order in which they were analysed. Both the refined data and some of the original rich detail will be used in the next three sections of this chapter to address the three key aspects of the research questions: (a) describing the activities; (b) detailing the influence of student needs on the choice of activities; and (c) examining possible external influences on the choice of activities. The last section will consider each type of activity in turn, and examine in detail the influences on their choice.

4.1 The Interviews and Written Responses

This section presents the results of the analysis of the individual and focus group interviews together with the written responses from page 2 of the Teacher Activity Survey (see Appendix B). All the material (i.e., spoken or written) related to direct answers by the itinerant teachers when asked about influences on their choice of activities, in accordance with the second research question. The qualitative analysis of these spoken and written answers yielded four levels of results. In summary, there were 43 discrete influences, which were arranged into four groups, and six key findings were selected that integrated the results. One key tension was also found that summarised and integrated may of the influences on the itinerant teachers’ choices of activities.

4.1.1 Influences.

The 10 individual interviews yielded 1224 coded references, which were initially coded into 36 themes and then thematically analysed using the methods
outlined in Section 3.5.4. Each theme coded a reported influence on the choice of itinerant teacher activities, and themes will hereafter be referred to as influences. The written responses had been free-coded prior to the interviews, and were then recoded using these 36 influences. The written responses differed from the interviews by being brief and lacking detail, and by sometimes being similar for all students of each teacher. A further five in vivo influences were added during recoding of the written material: itinerant teacher colleagues, other agencies, grade level of student, transition needs, and conducting formative assessments.

All 41 influences were used to code the focus group data, and a further two influences were added to test key findings, general student relationship building and world knowledge. The latter referred to general cognitive needs as well as general knowledge. All the qualitative data were now recoded using these 43 influences, as listed in Appendix O, in the format of a codebook. Further detail is available in Appendix P where the influences from the interviews are ordered according to the number of references to each. In addition, for some of the influences it was possible to count the number of itinerant teachers who spoke about them in the interviews and the number who mentioned it spontaneously, and those values are also given where available in Appendix P.

4.1.2 Groups.

Concurrently, patterns were developed to group similar influences. The broad groups were: (a) attending to documented student needs; (b) attending to general student needs; (c) collaborating and consulting with others, including school personnel and parents; and (d) adjusting and compensating for environmental and demographic factors from the school and the itinerant teacher.
Table 4.1.2 presents the influences organised into these groups together with the number of references made to each influence from all the three types of data (i.e., interviews, focus groups, and written comments), listed in order of frequency. Key findings, to be discussed later, are marked with two asterisks. It was important to note that frequencies do not equate with statistical importance, apart from very broad observations. In spite of this caution, it can be stated that 65% of all references were related to the needs of the students, a further 19% related to the need to provide collaboration and consultation, and the last 16% to the need to accommodate limiting influences. These approximate proportions do, to some extent at least, suggest the importance of each group for the itinerant teachers as they identified the reasons behind their choice of activities.

A further caution about using the frequencies as indicators of importance is that some themes were briefly but consistently mentioned, and with strong emphasis, such as the group groan recorded from one focus group when poor room acoustics was mentioned. This reaction, and others that were recorded or written, enabled the conclusion to be made that even though this influence attracted only 3% of the references, the data indicates that one significant influence on itinerant teacher activities was the consistently problematic (“woeful” by one interviewee’s description) acoustics of the classrooms. Another influence of similar low reference but high importance was parental influence.

Some other features of Table 4.1.2 concern the composition of the two student needs groups. The first related to documented student needs as written in the research questions. The thematic analysis, however, found another group termed general student needs. These referred to needs that were essentially unable to be documented but represented considerable challenges for itinerant teachers.
### Table 4.1.2
Frequencies of Mention of Influences on the Choice of Itinerant Teacher Activities

<table>
<thead>
<tr>
<th>Influence</th>
<th>Number of references</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Documented student needs</strong></td>
<td></td>
</tr>
<tr>
<td>To facilitate language development, including using language assessments</td>
<td>260</td>
</tr>
<tr>
<td>To provide curriculum support for the class program</td>
<td>158</td>
</tr>
<tr>
<td>To develop listening using an auditory skill program**</td>
<td>138</td>
</tr>
<tr>
<td>To assist with general hearing issues and assistive hearing technology</td>
<td>98</td>
</tr>
<tr>
<td>To assist with emotional and behavioural needs</td>
<td>63</td>
</tr>
<tr>
<td>To facilitate speech development</td>
<td>55</td>
</tr>
<tr>
<td>To facilitate literacy development</td>
<td>51</td>
</tr>
<tr>
<td>To develop the student’s world knowledge</td>
<td>38</td>
</tr>
<tr>
<td>To develop the student’s social capital</td>
<td>30</td>
</tr>
<tr>
<td>To provide curriculum support using alternative materials</td>
<td>16</td>
</tr>
<tr>
<td><strong>General student needs</strong></td>
<td></td>
</tr>
<tr>
<td>To incorporate student choices, and to engage and interest the student</td>
<td>144</td>
</tr>
<tr>
<td>To adjust to students with very high or low needs</td>
<td>65</td>
</tr>
<tr>
<td>To provide conversation as communication practice and for assessment</td>
<td>55</td>
</tr>
<tr>
<td>To conduct observations and respond to ongoing assessments</td>
<td>46</td>
</tr>
<tr>
<td>To integrate student communication goals into other activities</td>
<td>36</td>
</tr>
<tr>
<td>To adjust to additional disabilities of the student</td>
<td>29</td>
</tr>
<tr>
<td>To build a positive relationship with the student</td>
<td>26</td>
</tr>
<tr>
<td>To foster independence</td>
<td>20</td>
</tr>
<tr>
<td>To adjust to a student alienated with school</td>
<td>16</td>
</tr>
<tr>
<td>To adjust to the grade level of the student</td>
<td>10</td>
</tr>
<tr>
<td>To assist at transition times such as entry to secondary or infants school</td>
<td>3</td>
</tr>
<tr>
<td><strong>To provide consultation and collaboration</strong></td>
<td></td>
</tr>
<tr>
<td>With the class teacher</td>
<td>166</td>
</tr>
<tr>
<td>With the family</td>
<td>89</td>
</tr>
<tr>
<td>With the school management</td>
<td>33</td>
</tr>
<tr>
<td>To develop and work with Individual Learning Plans</td>
<td>29</td>
</tr>
<tr>
<td>With general school staff</td>
<td>23</td>
</tr>
<tr>
<td>To assist the school with adjustments and inclusion</td>
<td>22</td>
</tr>
<tr>
<td>To compensate for inappropriate class programs</td>
<td>13</td>
</tr>
<tr>
<td>With the teacher’s assistant</td>
<td>9</td>
</tr>
<tr>
<td>With the executive teacher of the itinerant teacher team</td>
<td>9</td>
</tr>
<tr>
<td>With itinerant teacher colleagues</td>
<td>9</td>
</tr>
<tr>
<td>With other agencies, such as Australian Hearing</td>
<td>4</td>
</tr>
<tr>
<td><strong>To accommodate to fixed boundaries</strong></td>
<td></td>
</tr>
<tr>
<td>Poor room acoustics</td>
<td>70</td>
</tr>
<tr>
<td>Itinerant teacher’s own understanding of role</td>
<td>69</td>
</tr>
<tr>
<td>Withdrawal policy of school or itinerant teacher</td>
<td>65</td>
</tr>
<tr>
<td>Time limitations</td>
<td>39</td>
</tr>
<tr>
<td>Room distractions</td>
<td>31</td>
</tr>
<tr>
<td>Itinerant teacher’s teaching background</td>
<td>23</td>
</tr>
<tr>
<td>School type—Pre-school, Primary, Secondary</td>
<td>18</td>
</tr>
<tr>
<td><strong>The uniqueness of each student and school</strong></td>
<td>11</td>
</tr>
</tbody>
</table>

*Note. Totals are from interviews, focus groups, and written comments. Boldface entries are key findings.*
The itinerant teachers indicated that the influences of general student needs were a main source of the variance in attending to specific student needs.

An example is student M3 in year 11 who had documented high language and listening needs, but these needs were not attended to because of her general needs relating to alienation from school, refusal of hearing aids and language help, and the high need to engage and interest her. Instead of providing explicit language teaching to this student, the itinerant teacher’s support was provided to assist with the literacy required for gaining a driving licence, and providing lesson notes in some subjects. These activities by the itinerant teacher were all supported and encouraged by the parents and the school.

Within the documented student needs, the relative proportions of mention in the interviews were similar to the quantitative results for the amount of time spent attending to these needs and the frequency of use of the relevant itinerant teacher activities. Thus language needs predominated in the discussions, along with listening and speech. The class curriculum, as exemplified in the frequent references to the class teacher, was also a strong influence, along with need to assist with literacy and world knowledge.

These findings will be presented in further detail in Section 4.7 where they will be integrated with statistical findings and fine-grained analysis of original data, using the framework of a listing of the types of itinerant teacher activities. It was possible, however, to discern further patterns, or key finding, that were also able to be linked to itinerant teacher activities.

4.1.3 Key findings.

The final phase of thematic analysis resulted in broad observations which integrated and summarized the list of influences. Extended detail is provided for the first key finding, because the research questions 2b (see Section 2.5.2) had a specific
focus on the role of documentary evidence on activities used for the linguistic needs of the students. The key findings can be summarized by stating that itinerant teachers selected activities for the following reasons.

**4.1.3.1 To facilitate language.**

Itinerant teachers spoke consistently of instances where a language need limited the ability of the students to engage fully in class learning. These instances were also opportunities to assist. Itinerant teachers rarely used specific language assessments to inform their choice of particular weekly language development activities. There were some exceptions, with itinerant teachers using programs with younger students or those with more severe language delays; these were that some itinerant teachers taught to the St. Gabriel’s curriculum (J. Brown et al., 2005) or used the sequence of concepts from the Bracken test (Bracken, 2006). Apart from these two circumstances, however, there were no designated programs in use. There was little evidence of specific teaching activities that related to detail from formal assessments except for broad goals such as working on tense or pronouns. There was no program available for use and little evidence of the use of key sequences within the strands of language development. Consequently the itinerant teachers most often worked on language difficulties as they arose. They demonstrated, however, that they held language development to be the key student need that they sought to facilitate, and they related numerous incidents of student misunderstandings that continually inspired them to provide language assistance.

**4.1.3.2 To engage and interest the students.**

Itinerant teachers used isolated therapy drills or classwork at times, but more often they sought ways to connect the programs for language teaching, listening, and
classwork with the interests and abilities of the students so that the students were actively engaged.

4.1.3 3 To work collaboratively with the class teachers.

Itinerant teachers did not see themselves as therapists only, who withdrew students to provide individual therapy. The itinerant teachers appeared acutely aware of what the class teacher was doing, and they actively sought ways to integrate the development of student communication needs with the class program. They spoke about using the ILPs and review meetings to foster collaboration, and tried to develop collaborative programs with the class teachers. They were not always successful in working collaboratively, but every one of them nominated this as a key itinerant teacher strategy.

Even though consultations and in-service professional development programs had been provided to the class teachers, there were examples of class teachers holding different understandings of inclusion to those of the itinerant teachers. One example was a class teacher insisting on the student participating in a lengthy class activity that did not advance the student’s skills and prevented withdrawal to a quieter location, where much valuable language teaching could have occurred. An anecdote by Chris illustrated this tension:

I don’t think [the class teacher] realises just how big the gap is. I mean, this child has no … literacy skills. She can’t write anything or read anything. She [the class teacher] insists on teaching her the magic 100 words so, is, and, the, and to me, I just can’t reconcile myself with that. I feel like, what am I doing?

These instances were rare, however, with many more examples of positive and supportive relationships between the itinerant teacher and the classroom teacher. In
these instances the classroom teacher made appropriate adjustments for the DHH student, and there was an evident respectful collaboration. An example of this was provided in Jill’s interview:

She [the class teacher] had a lot of visual aids. She was extremely diligent with the FM. She always, even with that classroom of Year Ones [i.e., grade one students], checked back with [the DHH student] before anything got started, checked with a number of children and always went back to her. Everything was discussed, demonstrated, etcetera, with visual aids … on the floor before they would go including role-playing, or another child modelling—all of those sort of things. She just was a brilliant teacher. So when that goes on, I don’t need to repeat that lesson. And I confirmed for myself, and also for the student, about twice a term [that the teaching was effective].

4.1.3.4 To develop auditory skills.

All the itinerant teachers spoke of the need to develop the auditory skills of most of their students, and for this they all used the framework of the Auditory Skills Program (ASP) (Romanik, 1990) in quiet withdrawal settings. All the itinerant teachers were conscious of either using this program or justifying why it was not relevant to the particular student. They were also conscious of the very poor acoustic conditions of the classrooms, with the consequent need to provide support in settings where the students could hear and concentrate.

4.1.3.5 To integrate student goals.

Time pressures and the need to transfer and extend skills led itinerant teachers to teach to more than one student goal with each activity. This was often done through
conversation, and often using the class program as illustrated by the following quotation from a written comment by Chris:

I believe all conversation is related to the above activities. I am always thinking of speech, language, audition, curriculum goals even when having a totally unrelated topic—speech/audition, and language are part of conversation.

4.1.3.6 To provide a flexible response.

Itinerant teachers had to adapt to the complexity of each student and class situation. The one exception was the use of the ASP for developing listening skills, which most itinerant teachers used regularly, with strategies selected according to a placement test in the program. Apart from this program, there were many instances of exceptional circumstances from students, parents, class teachers, and schools, which required the itinerant teacher to set aside their normal support provisions and adapt to the unusual situation.

4.1.4 Key tension.

A major finding was the evident tension between the demands of the class program and the communication needs of the student. With many students there were constant daily instances of communication gaps in spoken, signed, or written communication. For students with better language, misunderstandings were still evident in the demands of the class curriculum. Because the fundamental influence on the itinerant teacher activities that emerged from the thematic analysis was the communication needs of the student, addressing these needs was judged by them to be vital for enabling access to the class program. Itinerant teachers resolved this tension by continually facilitating language development using the following strategies: (a) by seemingly casual conversation; (b) by direct teaching; and (c) by using class content to
extend vocabulary and syntax as a means to pre- or post-teach the often incomprehensible classwork. Sometimes the key tension was addressed by using formal assessments and ILPs to provide written structure for the support activities, other times, however, the support activities were directed by the experience and intuition of itinerant teachers who were highly sensitised to the language difficulties of their DHH students.

4.2 The Questionnaires

Three kinds of data were available from the questionnaires, itinerant teacher demographics, itinerant teacher activities, and written responses to the research questions. The written responses have been presented in the previous section and the other two results will be presented here.

4.2.1 The teacher demographics survey.

Initial results of the teacher demographics survey (see Appendix A) were made available in the participants section of Chapter 3 (see Section 3.1.1) and further analysis is presented here. The itinerant teacher characteristics were examined for associations with each other to identify possible influences on the choice of activities (see Section 4.6.1). Spearman’s rank order correlation coefficient was calculated for three itinerant teacher variables (i.e., experience, qualifications, and teaching background). There was a significant correlation found between the teacher qualifications and the itinerant teaching experience of the itinerant teachers, \( r_s(14) = .70, p < .01 \), indicating that itinerant teachers with the highest qualifications were more likely to be the most experienced. The experienced itinerant teachers also tended to have prior teaching experience in the primary grade levels, \( r_s(14) = -.26, p < .05 \). These results must be interpreted with caution, however, because of the small sample size, with only one teacher being in the highest qualification category. The results suggest, however, that
part of the team are both well qualified and experienced and tend to have prior experience in teaching primary grades.

4.2.2 The teacher activities survey.

The front pages of the Teachers Activities Surveys (see Appendix B) provided frequency of use and time proportions for each of the 22 listed support activities. The results are summarized here. Research question 1a required an examination of ways to quantify and categorise the activities and this will be addressed in Section 4.4. Categorisation of the activities facilitated a refinement of the list for further analysis (see Section 4.5 and Section 4.6). The refined list and the original descriptive details were then used for a detailed examination of the association of the activities with the potential influences, in conjunction with results from the interviews and student files (see Section 4.7).

The Teachers Activity Survey (see Appendix B) presented 22 different support activities consisting of 18 direct teaching activities and four indirect activities, as listed in Table 4.2.2. They are grouped and labelled in Table 4.2.2 according to categories used by previous authors (Antia et al., 2010; Bullard, 2003). These categories were identical to three of the four groups found by the thematic analysis of interviews (see Section 4.12).

The 18 direct teaching activities consisted of 13 activities related to the assessed needs of the students and 5 that were related to general student needs. The assessed needs consisted of developing student skills in listening, spoken language, speech and/or sign, and supporting the academic curriculum. The general needs included note-taking, interpreting, conversing, assisting with hearing technology, and teaching a social/behavioural program. The other four activities were not direct teaching of students, but consisted of indirect collaborative support for the inclusion process by
providing consultation with parents and school staff, participating in and attending
review and planning meetings, and presenting in-services to school staff.

Table 4.2.2 Support Activities Provided by Itinerant Teachers

<table>
<thead>
<tr>
<th>Direct teaching activities related to assessed student needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching literacy/English, following the class teacher’s program</td>
</tr>
<tr>
<td>Teaching your own literacy/English program for this student</td>
</tr>
<tr>
<td>Teaching other subjects following the class teacher’s program</td>
</tr>
<tr>
<td>Teaching other subjects with itinerant teacher’s program</td>
</tr>
<tr>
<td>Teaching the vocabulary of the class curriculum</td>
</tr>
<tr>
<td>Teaching general vocabulary</td>
</tr>
<tr>
<td>Teaching speech skills</td>
</tr>
<tr>
<td>Teaching auditory skills separately with explicit targets</td>
</tr>
<tr>
<td>Teaching auditory skills integrated with other activities</td>
</tr>
<tr>
<td>Teaching spoken language separately with explicit targets</td>
</tr>
<tr>
<td>Teaching spoken language integrated with other activities</td>
</tr>
<tr>
<td>Teaching aspects of sign(ed) language</td>
</tr>
<tr>
<td>Teaching a social/behavioural program</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Direct teaching activities related to general student needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching study/organizational skills</td>
</tr>
<tr>
<td>Notetaking in mainstream lessons</td>
</tr>
<tr>
<td>Conversing with the student unrelated to the above activities</td>
</tr>
<tr>
<td>Providing sign interpreting (i.e., by you for this student)</td>
</tr>
<tr>
<td>Assisting with hearing technology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indirect activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consulting/communicating with parents</td>
</tr>
<tr>
<td>On-going consultation/communication with school staff</td>
</tr>
<tr>
<td>Presenting to school staff (i.e., in-service sessions)</td>
</tr>
<tr>
<td>Participating/organising school review/planning meetings</td>
</tr>
</tbody>
</table>

Note. Underlined headings were not in the original questionnaire. Wording of the 22 activities is as written in survey. The order of activities, within groups, is in accordance with the original questionnaire (see Appendix B).

Alternative teaching strategies were used for five assessed student needs, resulting in five pairs of related activities. Three student needs were for the teaching of literacy/English, vocabulary, and other subjects, and the two alternate strategies used
were either following the class program or using a separate program devised by the itinerant teacher. The alternate strategies for the other two student needs for the development of spoken language and auditory skills were to either use explicit targets, or to integrate the skill development with other activities.

4.3 The Student Files

When the student files were examined, there were three kinds of student learning needs data: (a) codes from the biannual student appraisal meetings (AM) for 10 students, as explained in Section 3.2.3; (b) requests for assistance from the ILPs for 28 students; and (c) information from other reports examined in the 28 student files (SF). Summary descriptions of the data from each of these sources are presented here, together with an assessment of the reliability and validity of the information. The results from this section will be used to examine of the relationships between student needs and the itinerant teacher activities in Section 4.5.

4.3.1 Student needs from the appraisal meetings.

These results were not used in further quantitative analysis because of the following data inadequacies:

- AM codes were only available for 10 of the 28 students because these formal meetings were held biannually or at significant transition points, such as entry into kindergarten or secondary grades.
- When data from this small sample were visually compared with the ILPs, there were considerable discrepancies between the related codes from the ILPs and the AM.
  - Six of 10 codes differed for both audition and literacy.
  - Five of 10 codes differed for language and communication.
• Some AM codes had only a few entries such as *Focus on Conversation* and *Focus on Vocabulary*.

When examined for individual students, however, the AM codes were able to contribute to a rich description of some students and explain some outliers in the other data sources (see Section 4.7).

**4.3.2 Student needs from the ILPs.**

When the 27 ILPs were examined, they contained requests for assistance in specific areas, as listed in Appendix S. The highest percentage was for audition skills (81%), closely followed by language (78%), and speech (70%). Just over half the students required staff consultation, and approximately a third required assistance with using their FMs, with lower values for assistance with literacy (30%), and assistance with other subjects (26%). The other student learning needs recorded were cognition (19%), study skills (11%), and vocabulary of the class program (11%). The student needs for audition, speech, and language learning, as documented in the ILPs, were then examined for their relationship with each other using cross tabulations. No significant relationships were found other than between language needs and speech needs, where 95% of students who required speech assistance also required language assistance, $\chi^2(1,n=28) = 12.28, p = .001$.

**4.3.3 Student needs from the files.**

The SF contained formal reports from schools; standardised assessments and reports from outside agencies; and programs, reports, and assessments by the itinerant teachers. The results for each need found are presented here, in preparation for an examination of the relationship between these needs and the itinerant teacher activities in Section 4.5.
4.3 The Student Files

4.3.3.1 Communication needs from the student files.

There was sufficient information in 27 of the 28 SFs to assign their average language abilities to four ordinal categories defined in terms of percentiles (see Section 3.4.3). For the purposes of the study, students in the 50th percentile and above were designated as High average and above, students from the 18th to the 49th percentile as Low average, students from the 5th to the 17th percentiles as Mild delay, and the 4th percentile or below as Moderate or severe language delay. The student percentiles were taken from the available standardised test results for 19 students; four students had two such assessments. In each of the four instances of two standardised tests being available, the assignments to the categories were in agreement. The standardised tests used were the Comprehensive Assessment of Spoken Language (CASL) (Carrow-Woodfolk, 1999) for 10 students; The Clinical Evaluation of Language Functioning, fourth edition, (CELF-4) (Semel, Wiig, & Secord, 2003) for four students; the Peabody Picture Vocabulary Test (PPVT-IV) (Dunn & Dunn, 2007) for three students; the Bracken (2006) for three; as well as one Vineland (2005). The other eight students without standardised test results had documentary evidence that enabled comparisons to be made between developmental language stages and the documented language abilities, sufficient for assigning them to one of the four categories. This included two students with assessments based on the St. Gabriel’s curriculum (J. Brown et al., 2005). The one student where the assignment to a category was questionable was omitted. The results are presented in Table 4.2.3a alongside the frequencies expected in a normal distribution. The ACT results for the DHH students differed significantly from the normal distribution, $\chi^2(3, n = 27) = 139, p < .001$, particularly because 24% of students had a moderate to severe language delay, rather than 4%, and only 52% of the students had language abilities deemed Low average or above, instead of the expected 83%.
CHAPTER 4. RESULTS

Table 4.3.3.1a
Percentages of Observed and Expected Language Abilities for ACT DHH Students

<table>
<thead>
<tr>
<th>Language ability^a</th>
<th>Observed</th>
<th>Expected^b</th>
</tr>
</thead>
<tbody>
<tr>
<td>High average and above</td>
<td>30</td>
<td>51</td>
</tr>
<tr>
<td>Low average</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Mild delay</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>Moderate/severe delay</td>
<td>26</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note.* ^a Average of receptive and expressive abilities. n = 27. ^b Expected percentages calculated using the percentiles that define the category of language ability, for example Mild delay is defined as being in the 5th to 17th percentile = 13 percentiles.

The standardised test scores were within the previous 12 months for 17 of the 19 available, the other two were within the previous two years. The testers were the current itinerant teacher for 16 of these tests, a past itinerant teacher for the other three. Six additional standardised tests, conducted by speech therapists, were available from external agencies. These external assessments in each case validated the categorisations made using the tests conducted by the itinerant teachers.

Table 4.3.3.1b
Percentages of Students Requiring Assistance for Speech and Audition Skills

<table>
<thead>
<tr>
<th>Category of need</th>
<th>Type of Need</th>
<th>Auditory skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Speech</td>
<td>36</td>
</tr>
<tr>
<td>Mild</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

*Note.* n=28

The percentages of students whose student files contained documented evidence of needing listening and speech therapy are presented in Table 4.2.3b. Some students did not need listening therapy (22%), or speech therapy (36%). Small percentages (15–21%) of the DHH students had high listening needs, and the majority had mild needs, less so for speech.
4.3.3.2 Academic abilities extracted from the student files.

The students’ academic abilities were initially divided into literacy ability, general academic ability, and ability in specific subjects other than literacy. The latter two divisions had identical results; hence they were simply reported as academic ability. Literacy had slightly different results but the results were comparable; in some cases specialised literacy test results were available and provided more detail than was recorded. Only school-age students could be included, which reduced the possible sample size to 24. The missing data further reduced the sample size to 18 for literacy and 15 for numeracy, which was 30% and 25% respectively of the DHH students supported by itinerant teachers in the current study. As presented in Table 4.2.3c, half of the students were below grade level in literacy, and 47% were below in academic subjects (see Section 3.4.3).

Table 4.2.3c

<table>
<thead>
<tr>
<th>Category</th>
<th>Academic</th>
<th>Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n = 15$</td>
<td>$n = 18$</td>
</tr>
<tr>
<td>Below grade level</td>
<td>47</td>
<td>50</td>
</tr>
<tr>
<td>Grade level</td>
<td>40</td>
<td>33</td>
</tr>
<tr>
<td>Above grade level</td>
<td>13</td>
<td>17</td>
</tr>
</tbody>
</table>

In order to examine the associations between language ability and literacy and academic abilities, as suggested in the literature (see Section 2.3.4), Spearman’s rank order correlations were calculated for the relationship between language abilities, literacy abilities, academic abilities, and hearing loss. There were significant correlations between language ability and literacy, $r_s(14) = -.67, p = .005$ and between language ability and academic ability, $r_s(15) = -.61, p = .01$. There were no significant correlations found between language ability and hearing loss. These results suggest the
interconnectedness of language ability, literacy ability, and academic ability independent of hearing loss.

**4.3.3.3 Hearing loss from the student files.**

The hearing losses of the 28 students are available in Table 4.3.3.3, and it can be seen that these were spread over the full range, with 21% of the students having a profound loss in their better ear. No information was available about the presence of auditory neuropathy.

<table>
<thead>
<tr>
<th>Category</th>
<th>Range in dB</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0-20</td>
<td>4</td>
</tr>
<tr>
<td>Mild</td>
<td>21-45</td>
<td>18</td>
</tr>
<tr>
<td>Moderate</td>
<td>46-60</td>
<td>29</td>
</tr>
<tr>
<td>Moderate/Severe</td>
<td>61-75</td>
<td>18</td>
</tr>
<tr>
<td>Severe</td>
<td>76-89</td>
<td>11</td>
</tr>
<tr>
<td>Profound</td>
<td>≥90</td>
<td>21</td>
</tr>
</tbody>
</table>

*Note. n = 28.*

**4.4 The Support Activities**

The first research question asked for the support activities to be described, quantified, and categorised. These aspects will be addressed here, using time and frequency measures. It is necessary, however, to outline the measures used to quantify the activities before these measures can be used to describe the activities.

**4.4.1 Quantifying the support activities.**

There were two different measures of each activity used for each student: the frequency of use and the proportions of time used. These measures will be presented before being used in the next section to describe the activities.
The frequency measures were calculated for three time periods: per year, per week, or per session. These are available in Table 4.4.1a together with the means and standard deviations for each activity per year.

<table>
<thead>
<tr>
<th>Support activity</th>
<th>Percentage of students who receive the activity</th>
<th>Total per year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At every session</td>
<td>At least weekly</td>
</tr>
<tr>
<td>Teaching using conversation</td>
<td>75</td>
<td>88</td>
</tr>
<tr>
<td>Teaching auditory skills with integrated targets</td>
<td>27</td>
<td>81</td>
</tr>
<tr>
<td>Teaching auditory skills with explicit targets</td>
<td>51</td>
<td>73</td>
</tr>
<tr>
<td>Teaching general vocabulary</td>
<td>58</td>
<td>69</td>
</tr>
<tr>
<td>Consulting with school staff</td>
<td>33</td>
<td>68</td>
</tr>
<tr>
<td>Teaching spoken language with integrated targets</td>
<td>63</td>
<td>66</td>
</tr>
<tr>
<td>Teaching speech skills</td>
<td>47</td>
<td>59</td>
</tr>
<tr>
<td>Teaching spoken language with explicit targets</td>
<td>37</td>
<td>54</td>
</tr>
<tr>
<td>Teaching the vocabulary of the class program</td>
<td>41</td>
<td>54</td>
</tr>
<tr>
<td>Teaching literacy with the class program</td>
<td>19</td>
<td>46</td>
</tr>
<tr>
<td>Teaching literacy with the itinerant teacher's program</td>
<td>25</td>
<td>44</td>
</tr>
<tr>
<td>Teaching other subjects with the class program</td>
<td>25</td>
<td>42</td>
</tr>
<tr>
<td>Consulting with parents</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Teaching other subjects with itinerant teacher’s program</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Assisting with hearing technology</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td>Teaching study skills</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>Implementing a social/behavioural program</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Note-taking</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Sign Interpreting</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Teaching signing</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Attending review and planning meetings</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Presenting to school staff</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
The activities are listed in order of the percentages of students who received each activity per week. As an example, 47% of the students received speech teaching at every support session, 59% of the students received this activity at least weekly, and 64% at least once per year. The mean number of instances of teaching speech skills, per student, was 54 per year, $SD = 69$.

The standard deviations for all frequency measures were consistently high, indicating that caution must be used when making generalisations about this data, and also indicating that normal distributions cannot be assumed for further analysis. There was also wide variability between the activities. Six were provided to over two-thirds of the students weekly, and two were never provided weekly, although one of these, attending review and planning meetings, was provided to 85% of the students at least annually.

The time measures are provided in Table 4.4.1b, with means and standard deviations calculated over the whole school year, in order of the reported percentage of support time. The last column contains a second useful time measure, computed by excluding the students who did not receive the activity. Means were then calculated using the remaining students. This was particularly useful when considering the activities such as sign interpreting, which had a low time percentage (1.2%) when averaged over all 59 students, but was much higher (17.3%) when averaged for the four students who actually received sign interpreting. As explained in 3.4.2.3, there were reliability concerns about the time measures, so they were used for descriptive purposes only (Section 4.4.2 and Section 4.7), and not for further statistical analysis (Section 4.4.3).
Table 4.4.1b

<table>
<thead>
<tr>
<th>Support activity</th>
<th>All students</th>
<th>Selected students</th>
<th>Maximum percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Teaching auditory skills with integrated targets</td>
<td>11.4</td>
<td>12</td>
<td>13.2</td>
</tr>
<tr>
<td>Teaching auditory skills with explicit targets</td>
<td>9.8</td>
<td>8.7</td>
<td>12.0</td>
</tr>
<tr>
<td>Teaching literacy with the class program</td>
<td>9.6</td>
<td>16</td>
<td>16.6</td>
</tr>
<tr>
<td>Teaching using conversation</td>
<td>8.9</td>
<td>7.8</td>
<td>10.3</td>
</tr>
<tr>
<td>Teaching spoken language with integrated targets</td>
<td>7.8</td>
<td>8.3</td>
<td>11.1</td>
</tr>
<tr>
<td>Teaching literacy with the itinerant teacher's program</td>
<td>7.4</td>
<td>11</td>
<td>14.6</td>
</tr>
<tr>
<td>Teaching other subjects with class program</td>
<td>6.8</td>
<td>10</td>
<td>12.9</td>
</tr>
<tr>
<td>Teaching spoken language with explicit targets</td>
<td>6.3</td>
<td>7.6</td>
<td>10.0</td>
</tr>
<tr>
<td>Teaching general vocabulary</td>
<td>5.8</td>
<td>5.3</td>
<td>7.2</td>
</tr>
<tr>
<td>Teaching the vocabulary of the class program</td>
<td>4.2</td>
<td>7.4</td>
<td>7.1</td>
</tr>
<tr>
<td>Consulting with school staff</td>
<td>3.8</td>
<td>3.1</td>
<td>4.6</td>
</tr>
<tr>
<td>Teaching speech skills</td>
<td>3.5</td>
<td>3.9</td>
<td>5.4</td>
</tr>
<tr>
<td>Note-taking</td>
<td>2.6</td>
<td>9.2</td>
<td>14.0</td>
</tr>
<tr>
<td>Consulting with parents</td>
<td>2.4</td>
<td>3.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Teaching other subjects with itinerant teacher’s program</td>
<td>2.1</td>
<td>4.0</td>
<td>6.2</td>
</tr>
<tr>
<td>Teaching study skills</td>
<td>2.0</td>
<td>3.7</td>
<td>6.1</td>
</tr>
<tr>
<td>Implementing a social/behavioural program</td>
<td>1.7</td>
<td>4.9</td>
<td>6.1</td>
</tr>
<tr>
<td>Attending review and planning meetings</td>
<td>1.5</td>
<td>1.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Assisting with hearing technology</td>
<td>1.4</td>
<td>2.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Sign Interpreting</td>
<td>1.2</td>
<td>4.8</td>
<td>17.3</td>
</tr>
<tr>
<td>Presenting to school staff</td>
<td>0.9</td>
<td>1.4</td>
<td>2.1</td>
</tr>
<tr>
<td>Teaching signing</td>
<td>0.3</td>
<td>2.0</td>
<td>6.3</td>
</tr>
</tbody>
</table>

Note. *Mean percentage of time, as estimated by itinerant teachers for the whole school year, averaged over all students. Means calculated using only those students who received the activity.*

### 4.4.2 Describing the support activities.

The four indirect activities will be described first because they were similar to those activities well described in the literature (Hyde & Power, 2004b; Luckner & Ayantoye, 2013; Luckner & Miller, 1994). At least annually (see Table 4.4.1a), most students (92%) received Consulting with staff, Consulting with parents (81%), and
Participating/organising review and planning meetings (85%). Presentations to the school staff were provided to just over half the students (56%), but the corresponding percentages for weekly or sessional frequency were lower. As expected, review meetings and staff presentations were never received weekly. Consultations were provided weekly to parents for 32% of the students, and consultations were provided to school staff weekly for 68% of the students. The corresponding percentages of time (see Table 4.4.1b) were much lower still (4%, 2%, 1.5%, and 0.9% respectively).

Note-taking, Sign interpreting, and Teaching specific aspects of sign(ed) language each represented very small proportions of the average itinerant teacher time (2.6%, 1.2%, 0.3%, respectively), however, when the frequency measures were consulted, Note-taking was used for only nine students and Sign interpreting for only the four signing students. When the time was averaged for only those students who received this activity, the means were 14%, 17%, and 6% of the time, respectively, the first two of which were higher than the overall averages for any other activity.

Other activities had high frequencies and high time proportions, such as the two activities designed to improve auditory skills. Eighty-one percent and 73% of students received these at least weekly, using both integrated and explicit targets, which represented 11% and 10% respectively of the average teaching time. These results indicated that most students received these direct teaching activities, and that they represented a consistently high percentage of the support time. It also indicated that both strategies were important to the itinerant teachers—using explicit targets to develop isolated skills and then integrating the practised skills into practical listening situations.

Conversing with the student had the highest frequency across all measures, with 90% of students having received it at least annually, and almost all of those students
receiving it at least weekly (88%). It had the fourth highest time proportion at 8.9%. In contrast, *Teaching literacy/English using the class program* had a very high time proportion, 9.6%, but was received at least annually by only 59% of students. When the calculation was performed for only those students who received it, the time proportion rose to a very high 17%, suggesting that about half the students received literacy/English teaching as a regular arranged activity that incorporated or supported the class agenda.

Spoken language received consistently high support, 7% and 8% of the support time, with 66% and 54% of the students receiving it at least weekly. Notably, the proportions for teachers pursuing integrated spoken language targets were higher than for those pursuing explicit spoken language targets. In contrast, although the proportions for teaching vocabulary were similarly high, they were higher for *Teaching general vocabulary*, 69% at least weekly, in contrast to 54% at least weekly for *Teaching the vocabulary of the class program*. *Teaching speech* happened frequently (59% at least weekly), but took little time (3.5%).

*Teaching other subjects* had a higher weekly frequency when it referred to the class program (44%) than when the itinerant teacher’s program was used (30%), and was taught for an average 6.8% of the support time with the class program instead of 2.1% for the itinerant teachers’ program. *Assisting with hearing technology* had low measures, about 1% of the time, and only 27% of students received this at least weekly, although many more (61%) received it at least annually. *Teaching study skills* and *Teaching a social/behavioural program* had similar low measures for time proportions and weekly frequencies, but the annual support proportions were also low, at 32% and 25% of students, suggesting that there was only a small group of students who received this support.
CHAPTER 4. RESULTS

The two data types—percentage of support time and frequency of activities—together with their associated summary statistics, provided complementary ways of measuring and describing the itinerant teacher activities. The value of using both measures was particularly evident with the low frequency indirect activities.

4.4.3 Categorising the activities.

Research question 1a asked for ways to categorise the activities, particularly to examine whether there were “core” activities that most students received, and other activities that depended on individual student needs. To answer this question various categorisations of the 22 activities were examined. These categorisations included theoretically derived categories (e.g., two activities related to auditory skills, four activities related to consultation and collaboration), and also categories identified by factor analysis. Categories that contain two or more of the 22 individual activities will be referred to as composite activities, and these will be examined to determine the extent to which they relate to documented student needs or other influences.

4.4.2.1 Constructing composite activities.

Theoretical combinations were made of some of the original 22 individual categories. The transform function in SPSS was used to provide average frequencies and time proportions of the resultant composite activities. An example of this process involved the two strategies used to teach auditory skills using either integrated targets or explicit targets. Teaching auditory skills using integrated targets and Teaching auditory skills using explicit targets were added together to make a composite activity termed Teaching auditory skills. Using this composite activity, it was now possible to report that Teaching auditory skills (using either strategy) was provided to 88% of the students weekly and it represented, on average, 21% of the total support time. This composite activity was also now available for correlational analysis with the assessment of student
auditory skills from the student files, and with the request for assistance with auditory skills in the ILP. There were four other student needs that were addressed by similar pairs of alternative activities and these will be further examined in Section 4.6.2 to establish whether they were in fact distinct activities, and whether they indicate differences in individual itinerant teacher teaching styles.

Other composite activities relevant to particular possible influences were similarly constructed by adding together two or more activities that were functionally similar, based on their descriptions in the original questionnaire and validated from interview data. Table 4.4.2.1 lists the combinations used to build these composite activities with the results of three associated measures: the average proportion of students who received this activity yearly and weekly, and the average proportion of time over the year. The list of composite activities is not inclusive of all activities, and some individual activities are included in a number of composite activities. The list contains possible theoretical combinations that can be used to examine relationships with different potential influences, particularly where two strategies were used for one well-documented student need.

One composite activity in Table 4.4.2.1 was constructed by including component activities judged by the researcher to require specialist TOD qualifications. That activity consisted of Assisting with hearing technology; teaching speech, auditory skills, and spoken language; signing; and providing consultation to school staff and parents about these matters. Teaching general vocabulary was included because it required an understanding of normal vocabulary development in the context of assisting DHH students to acquire language.
Table 4.4.2.1  
*Composite Itinerant Teacher Activities: Frequency and Time Measures*

<table>
<thead>
<tr>
<th>Composite activities and their components (^a)</th>
<th>Frequency(^a)</th>
<th>Time</th>
<th>Mean(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At least weekly</td>
<td>At least yearly</td>
<td>%</td>
</tr>
<tr>
<td>Teaching requiring specialist TOD(^c) qualifications</td>
<td>98</td>
<td>100</td>
<td>56</td>
</tr>
<tr>
<td>- Developing skills in listening, language, speech, sign, general vocabulary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Assisting with hearing technology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Providing collaborative support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing collaborative support</td>
<td>95</td>
<td>97</td>
<td>8.7</td>
</tr>
<tr>
<td>- Providing consultation, in-services, review meetings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching language</td>
<td>92</td>
<td>93</td>
<td>28</td>
</tr>
<tr>
<td>- Spoken or sign, speech, vocabulary.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consulting with school or parents</td>
<td>93</td>
<td>95</td>
<td>6.2</td>
</tr>
<tr>
<td>Using auditory-verbal strategies</td>
<td>91</td>
<td>97</td>
<td>43</td>
</tr>
<tr>
<td>- Developing listening, spoken language, and speech</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Assisting with hearing technology; consulting parents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching auditory skills</td>
<td>88</td>
<td>90</td>
<td>21</td>
</tr>
<tr>
<td>- Either integrated or explicit targets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching vocabulary</td>
<td>83</td>
<td>85</td>
<td>10</td>
</tr>
<tr>
<td>- From the class program or itinerant teacher’s program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching directly related to the class program</td>
<td>76</td>
<td>78</td>
<td>26</td>
</tr>
<tr>
<td>- Teaching literacy, other subjects, study skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Providing sign interpreting, note-taking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching spoken language</td>
<td>71</td>
<td>73</td>
<td>14</td>
</tr>
<tr>
<td>- Either integrated or explicit targets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching literacy with program either from class or from itinerant teacher</td>
<td>71</td>
<td>73</td>
<td>17</td>
</tr>
<tr>
<td>Teaching other subjects with program either from class or from itinerant teacher</td>
<td>52</td>
<td>56</td>
<td>8.9</td>
</tr>
<tr>
<td>Using sign: Either teaching sign or interpreting in class</td>
<td>5</td>
<td>7</td>
<td>1.5</td>
</tr>
<tr>
<td>Meetings: Reviews, planning or providing in-service</td>
<td>0</td>
<td>86</td>
<td>2.5</td>
</tr>
</tbody>
</table>

\(a\) \(N=59\). \(b\) Average percentage of time that a student received each activity, per week. \(c\) Teacher of the Deaf.
Teaching literacy and other subjects was not included in Table 4.4.2.1 even though there is some evidence that TODs can be more effective with these subjects than classroom teachers (Marschark & Hauser, 2008), but a more conservative approach was taken to compose this composite activity. Even with this conservative approach, *Teaching requiring specialist TOD qualifications* received the highest frequency and time measures.

Another composite activity, not listed in Table 4.4.2.1, was compiled from all 18 direct teaching activities as listed in Table 4.2.2. Direct teaching was used for an average of 89% of the teaching time (SD = 9.2) and was provided at least weekly for 100% of the students, with an average student receiving 22 different instances of this teaching per week (i.e., utilising a possible 18 different types of direct teaching).

**4.4.2.2 Using factor analysis.**

The other strategy used for categorising the 22 individual activities was EFA, conducted using the procedures briefly described in Section 3.4.2.4. The purpose of EFA was to condense the 22 activities into a smaller number of type of activities which could be used in association statistics. The first stage of EFA was to examine the communalities. Communalities were calculated from the frequencies and are available in Appendix Q. Only one item, *Participating/organising review and planning meetings*, had a low communality (.31), which indicated that it was not related to the other items. For this reason it was not included in further exploratory factor analysis. Of the 21 remaining, 15 had high communalities, greater than .8, with only two below .7, which indicated that the 21 items were suitable for EFA.

Examination of the scree plot, available in Appendix R, suggested four factors. These factors were tested by rotations involving 3–7 factors in keeping with the
suggestion of Costello and Osborne (2005), that mistakes involving incorporating items in factors were more likely when the factor numbers were restricted.

Visual inspection of the numerous high correlations between items indicated that there would likely be some correlation between factors; Oblimin rotation was therefore used. The further rotations for 3–7 factors resulted in three factors, which had consistent high loadings and minimal cross loadings. Oblimin rotations with five or six factors produced Heywood violations of loadings > 1 and when seven factors were sought it failed to converge. Factors other than the first three were weak and unstable with small loadings and multiple higher cross loadings even when Varimax rotation was used. There were consistent results, however, with the fourth factor, which had only one high loading (.741)—Consultation with school staff—together with two moderate negative cross loadings. Because it was the only high loading for this activity it was tentatively included to enable further descriptions of this item.

These four extracted factors together explain 73% of the variance, with each factor explaining 41%, 15%, 11%, and 7% of the variance, respectively. The pattern matrix table is displayed in Table 4.4.2.2a. The factor correlation table is displayed in Table 4.4.2.2b and shows that Factor 1 had moderate correlations with the second and third factors $r(59) = .36$, $r(59) = .28$, a result which further supported the choice of oblique rotation rather than orthogonal. The four factors were named by combining the names of the high loading components, excluding the cross loading components, as shown in Table 4.4.2.2a. Auditory-verbal teaching (Factor 1) contained five direct teaching activities designed to facilitate the development of spoken language and auditory skills. It should be noted that even though there are a number of similarities to A-V therapy as discussed in Section 2.3.1, it is not identical. Class program support (Factor 2) contained six activities that directly related to the class curriculum.
Table 4.4.2.2a

Pattern Matrix for Frequency Measures of 21 Itinerant Teacher Activities

<table>
<thead>
<tr>
<th>Itinerant teacher activity</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Teaching auditory skills with explicit targets</td>
<td>.95</td>
</tr>
<tr>
<td>Teaching spoken language with integrated targets</td>
<td>.94</td>
</tr>
<tr>
<td>Teaching auditory skills with integrated targets</td>
<td>.93</td>
</tr>
<tr>
<td>Teaching spoken language with explicit targets</td>
<td>.85</td>
</tr>
<tr>
<td>Teaching speech skills</td>
<td>.80</td>
</tr>
<tr>
<td>Teaching literacy with the itinerant teacher's program</td>
<td>.48</td>
</tr>
<tr>
<td>Implementing a social/behavioural program</td>
<td>.40</td>
</tr>
<tr>
<td>Teaching other subjects with the class program</td>
<td>.98</td>
</tr>
<tr>
<td>Notetaking</td>
<td>.96</td>
</tr>
<tr>
<td>Teaching the vocabulary of the class program</td>
<td>.88</td>
</tr>
<tr>
<td>Conversing with the student</td>
<td>.75</td>
</tr>
<tr>
<td>Teaching literacy with the class program</td>
<td>.67</td>
</tr>
<tr>
<td>Teaching study skills</td>
<td>.63</td>
</tr>
<tr>
<td>Teaching general vocabulary</td>
<td>.43</td>
</tr>
<tr>
<td>Teaching signing</td>
<td></td>
</tr>
<tr>
<td>Sign Interpreting</td>
<td>.92</td>
</tr>
<tr>
<td>Assisting with hearing technology</td>
<td>.86</td>
</tr>
<tr>
<td>Teaching other subjects with itinerant teacher's program</td>
<td>.64</td>
</tr>
<tr>
<td>Consulting with school staff</td>
<td>.27</td>
</tr>
<tr>
<td>Presenting to school staff</td>
<td>.35</td>
</tr>
<tr>
<td>Consulting with parents</td>
<td>.26</td>
</tr>
</tbody>
</table>


Hearing and signing support (Factor 3) referred to two signing activities, used with four students who also received high levels of assistance with hearing technology.

Staff consultancy (Factor 4) referred primarily to Consulting with the school staff, which also had a high negative loading with Presenting to school staff which suggested an either/or relationship between these two activities.
Table 4.4.2b

Factor Correlation Matrix for Frequencies of Itinerant Teacher Activities

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.000</td>
<td>.358</td>
<td>.279</td>
<td>-.099</td>
</tr>
<tr>
<td>2</td>
<td>.358</td>
<td>1.000</td>
<td>.171</td>
<td>-.038</td>
</tr>
<tr>
<td>3</td>
<td>.279</td>
<td>.171</td>
<td>1.000</td>
<td>-.032</td>
</tr>
<tr>
<td>4</td>
<td>-.099</td>
<td>-.038</td>
<td>-.032</td>
<td>1.000</td>
</tr>
</tbody>
</table>


Activities that had moderate or higher cross loadings were removed from the factor components and kept as single activities because their inclusion in just one of the factors would have resulted in a loss of important information about that activity. Their removal also meant that the time and frequency measure of the factors could be more closely approximated using the mutually exclusive strong components only, thus providing useful descriptive data. Factor 4, Consultation with staff, however, was retained even though it had a moderate cross loading with Factor 2, Class program support because it was consistently extracted and its retention as a factor enabled more accurate correlational analysis.

The activities removed because of cross loadings were: Teaching literacy with the itinerant teacher's program, Teaching a social/behavioural program, and Teaching general vocabulary. These were kept as separate activities, as were Consulting with parents and Presenting to school staff, which did not load significantly or positively with any of the factors and also had the lowest communalities. Together with the initial removal of Attending review and planning meetings, this meant that the 22 activities were condensed to 11 items which described all the 22 activities. These 11 items consisted of four factors comprised of 15 activities, and 7 additional activities. All 11 items were now termed types of activities, because statistically each represented a
distinct type of activity that was not significantly correlated with any of the other 11 types.

One further transformation was used to enable the four types of activities that were identified by factor analysis to be numerically compared with the seven individual activities using similar frequency and time measures. A very close approximation of these four types of activities was made by computing composite variables consisting of additions of the high loading component activities for each factor. The averages of the composite activities were used to calculate three measures: weekly frequencies, annual frequencies, and proportion of time. These three composite activities used as approximations of the time and frequency measures for the four factors, and the measures for the seven original activities, are presented in Table 4.4.2.2c. These averages were used for descriptive comparisons only, and the original factors were used to compute correlations.

Some qualification is needed in referring to Type 3: *Hearing and sign support*, which consisted of two individual activities, *Assisting with hearing technology* and *Teaching signing* and *Sign support*. Only four students, representing 7% of the 59 students, used sign language. Three of the four also required quite high levels of assistance with hearing technology (AHT) and the other student received no assistance, presumably because no listening device was used. Few of the other 55 students required much assistance with hearing technology ($M = 25$ instances per year, $SD = 44$) and 39% of students required no such support. This asymmetric distribution resulted in the exclusive high loading of the activity of *Assisting with hearing technology* with signing activities, even though there were also some low cross loadings of AHT with Factor 1: *Auditory-verbal teaching*, and Factor 4: *Consultation with staff*. 
### Table 4.4.2.2c

*Frequency and Time Measures of 11 Types of Itinerant Teacher Activities Condensed from 22 Individual Activities*

<table>
<thead>
<tr>
<th>Type of itinerant teacher activity</th>
<th>Frequency&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At least weekly</td>
<td>At least annually</td>
</tr>
<tr>
<td>1. Auditory–verbal teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Teaching auditory skills</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>• Teaching spoken language</td>
<td>88</td>
<td>90</td>
</tr>
<tr>
<td>• Teaching speech</td>
<td>71</td>
<td>73</td>
</tr>
<tr>
<td>2. Class program support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Conversing with the student</td>
<td>95</td>
<td>97</td>
</tr>
<tr>
<td>• Teaching the vocabulary of the class program</td>
<td>88</td>
<td>90</td>
</tr>
<tr>
<td>• Teaching literacy with the class program</td>
<td>54</td>
<td>61</td>
</tr>
<tr>
<td>• Teaching other subjects with class program</td>
<td>46</td>
<td>59</td>
</tr>
<tr>
<td>• Teaching study skills</td>
<td>42</td>
<td>47</td>
</tr>
<tr>
<td>• Note-taking</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>• Note-taking</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>3. Hearing and Sign Support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Assisting with hearing technology</td>
<td>31</td>
<td>63</td>
</tr>
<tr>
<td>• Teaching signing and sign interpreting*</td>
<td>27</td>
<td>6</td>
</tr>
<tr>
<td>4. Consulting with staff</td>
<td>68</td>
<td>92</td>
</tr>
<tr>
<td>5. Teaching general vocabulary</td>
<td>69</td>
<td>80</td>
</tr>
<tr>
<td>6. Teaching literacy with the itinerant teacher's program</td>
<td>44</td>
<td>51</td>
</tr>
<tr>
<td>7. Consulting with parents</td>
<td>32</td>
<td>81</td>
</tr>
<tr>
<td>8. Teaching other subjects with itinerant teacher’s program</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>9. Teaching a social/behavioural program</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>10. Presenting to school staff</td>
<td>0</td>
<td>56</td>
</tr>
<tr>
<td>11. Participating/organising review and planning meetings</td>
<td>0</td>
<td>85</td>
</tr>
</tbody>
</table>

*Note.* The 11 types of activities are mutually exclusive and include all 22 individual activities. Composite activities are in boldface.

<sup>a</sup>N = 59.

The third factor was retained, however, because it indicated that students who sign generally also received high levels of support with their AHT. It did not indicate, however, that these were the only students who required such assistance.
These 11 types of activities represented all the distinct activities that itinerant teachers provided to their DHH students, and these were now able to be examined for their correlation with potential influences on their selection. Within the first three types of activities there were also composite activities, such as the two activities for teaching spoken language. Subsequent correlational analysis also examined the association of these with the relevant student needs (i.e., language ability). The composite activities, whether derived from theory (i.e., Table 4.4.2.1) or from factor analysis (i.e., Table 4.4.2.2c), enabled different aspects of the activities to be explored for their relationship with the potential influences.

4.4.4 Selecting core activities.

Core activities were defined by the first research question in terms of being common to all or most students, schools, and itinerant teachers. A reasonable estimate for deciding on a core activity was a frequency of 90% or more. The frequency measures in Table 4.4.1a were consulted to identify possible core activities and there was no single activity that every student received during every support session, every week, or even every year. The most frequently received individual activity was conversing with the student, which 90% of students received annually, and 89% weekly. Using the 90% decision rule, conversation was the only one of the 22 activities that qualified as a core activity. Composite activities were then examined from Table 4.4.2.1 and there were three where the component activities did not overlap with each other and a frequency measure was 90% or over. These were (with corresponding frequencies): consulting with school or parents (93% weekly), teaching language (i.e., spoken language, vocabulary, sign or speech—92% weekly), and teaching auditory skills (88% weekly, 90% annually). Using the decision rule outlined above, these four activities were designated core activities, which indicates that the provision of these activities was
independent of documented student needs, and independent of possible external influences.

The second research question asked whether activities other than the core activities could be related to specific learning needs of the students (to be examined in the next section), or external influences (to be examined in Section 4.6). One example is signing which was only used for four students, yet could perhaps be termed a core activity for those students who use sign to communicate. In fact, the highest time percentage for an individual activity was sign interpreting, which represented 17% of the support time for the signing students. Other specific developmental, learning, and curriculum access needs of the students will be explored in the following section.

4.5 Student Influences on the Activities

The teacher activities survey and the student files provided data for examining a range of possible influences pertaining to the needs of the students.

4.5.1 Influences from student needs from the teacher activities survey.

There were four general questions about the itinerant teachers’ students on the front page of the activities questionnaires. Those asked for grade level, support hours, percentage of withdrawal, and the number of support sessions provided per week. There was a significant correlation between the number of support sessions and grade level, \( r(59) = .31, p = .016 \), suggesting that older students were more likely to have their support hours broken into multiple sessions. The other results for support sessions mirrored those for total support hours, so no further analysis was conducted using number of support sessions.

The other three student variables for the 59 students were total support hours, percentage of support time spent in a withdrawal setting, and grade level of the student. Hearing loss data were available for 28 of these students, and it was examined together
with these other three student demographic variables because it was also a fixed student characteristic rather than a request for assistance.

### 4.5.1.1 Relationships with withdrawal percentages.

The mean percentage of time spent in withdrawal was high, $M = 62\%$, $SD = 35$, with 32% of students receiving withdrawal for all of their support time, and 43% receiving more than 75% withdrawal. These higher values for the withdrawal percentages were significantly negatively correlated with high support hours, $r(51) = -.53$, $p = .00$, indicating that those students who received high support hours were more likely to receive a greater proportion of this in the classroom. It was possible that the small group of signing students contributed to this result because they all received high support hours and would be able to access signing assistance while in a noisy classroom. There was, however, no correlation between withdrawal and the signing activities.

There was also a significant correlation between percentage withdrawal and Class program support, $r(49) = -.44$, $p = .001$, indicating that the Class program support was more likely to be delivered in the classroom, or conversely, that those students, and perhaps the class teachers who preferred itinerant teacher support to be delivered in the classroom, received a higher proportion of Class program support than other types of itinerant teacher activities.

### 4.5.1.2 Relationships with total support hours.

Examination of the interview data raised the possibility that students with low total support hours, one or two hours per week, had a different range of itinerant teacher activities than students with very high hours. The total support hours for each student ranged from 1 to 9, $M = 3.27$, $SD = 2.57$. Apart from the moderate negative correlation between Class program support and withdrawal percentage discussed above, students
with higher support hours received more time with most itinerant teacher activities. There was, however, no greater incidence of Consultation with the parents, Presenting to the school staff, Participating/organising review and planning meetings, or Teaching other subjects with the itinerant teacher’s program. In other words, if more time was available for a student, those particular activities were not increased. In contrast, the highest correlation with high support hours was for Class program support $r(57) = .73$, $p < .001$, and teaching general vocabulary $r(57) = .76$, $p < .001$, suggesting that these two areas absorbed the increased support hours. There was a significant negative correlation between withdrawal percentage and number of support hours, $r(51) = -.53$, $p < .000$, indicating that those students with higher support hours received more support in class than those with lower hours, and conversely that those students who received low support hours, one to two hours per week, usually received this support outside the classroom.

Examination of a scatter plot of total support hours with frequency of Teaching a social/behavioural program indicated that all the students who received high frequencies of Teaching a social/behavioural program had high total support hours, $r(57) = .41$, $p = .001$.

4.5.1.3 Relationships with hearing loss.

It is possible that hearing loss influenced itinerant teacher activities by influencing the amount of assistance required with hearing technology. Itinerant teachers reported in the interviews that FMs often required considerable support to use, and there was information for 23 of the 28 students about FM use. FM assistance was requested for 40% of the students, 11% had rejected the FM, and a further 21% of the students used the FM consistently and thus required no support. These proportions, however, were not correlated with the requests in the ILPs for: (a) assistance with the
FM; (b) hearing loss; nor (c) the itinerant teacher activity of Assisting with hearing technology. Interview comments suggested, however, that besides FMIs, hearing aids and implants also sometimes required regular assistance to use, particularly if they were recently introduced.

There was a significant correlation between hearing loss and the activity of Providing assistance with hearing technology, \( r(26) = .39, p = .04 \), indicating that students with higher hearing losses required more assistance with using the hearing technology, although hearing loss contributed only 15% of the variance in this activity. The low number of signing students allowed these results to be examined closely, and three of them received quite high levels of assistance with their hearing technology, as well as receiving signing support.

Students with greater hearing losses were more likely to receive higher total support hours, \( r(26) = .43, p < .02 \), and they were more likely to receive A-V teaching, \( r(26) = .45, p < .02 \), and teaching of general vocabulary, \( r(26) = .42, p = .02 \). This was in spite of the fact that their language, literacy, and academic abilities were not correlated with their hearing loss.

### 4.5.1.4 Relationships with grade level.

Student grade level was evenly spread throughout the years, with a slightly higher figure for preschool because this may last for two years, and a slightly lower figure for year 7. Grade level was not related to the other student variables, so the amount of support time or the percentage withdrawal was independent of the grade level of the student. Grade level was, however, significantly correlated with Class program support, \( r(57) = .43, p = .001 \), which in turn was correlated with support hours, \( r(57) = .73, p < .001 \), and negatively correlated with percentage withdrawal, \( r(49) = -.44, p = .001 \). Considering also that grade level was a negatively correlation with Consulting
with parents, $r(57) = -0.39, p = 0.01$, it indicates a tendency for students in higher grade levels who receive high support hours, to receive higher proportions of Class program support, more often within the classroom, and with fewer consultations with parents.

There was a low correlation between grade level and the time spent on teaching auditory skills with explicit targets, $r(57) = -0.278, p = 0.033$, indicating that it was used for lesser proportions of time with older students.

The relationships between grade level and consultation activities were examined more closely using box graphs and scatter plots. Preschoolers received a higher mean frequency of Consultations with parents, approximately weekly, with more variability once they started school, as shown in Figure 4.5.1. As they progressed to primary grade levels of three to six and then secondary, the mean was less than monthly.

*Figure 4.5.1. Distribution of mean frequency per year of Consulting with parents according to grade level. Numbers refer to student cases. Means and interquartiles shown. $N = 59$."

Means for the frequency of Consultations with school staff were approximately equal for category of grade level, but the distributions in the higher grade levels was
affected by the outliers. When the five outlier cases were examined, each had documented other needs (three were ESL), and received high weekly support hours (>5), which allowed more opportunities for consulting with staff.

4.5.2 Influences from student needs documented in the student files.

Rank order correlation coefficients were calculated for the relationship between each of the student learning needs in the ILPs and the related itinerant teacher activities, with the exception of cognition for which there was no specific itinerant teacher activity. There was no significant correlation between the ILP requests and the teaching activities provided by the itinerant teachers with the exception of Teaching spoken language with explicit targets and the ILP request for facilitating language development, \( r_s(28) = .39, p = .04 \), suggesting that those students who had a language need recorded in the ILP were slightly more likely to have formal language teaching, or expressed another way, that approximately 15% of the variance in language teaching activity could be explained by the presence of ILP requests in that area.

The relationship between the student needs recorded in the ILP and the itinerant teacher activities was further examined by comparing them with the percentages of the relevant assistance provided weekly to the full sample of 59 students, which is also included in Appendix S. The highest percentages of students where support was requested in the ILPs were in the communication areas of auditory skills, language development, and speech. This support was provided to a higher proportion of students than the proportion of students who had a documented request for such support, indicating that the support in these three areas was independent of the ILP. The itinerant teachers also provided support in academic areas for a higher proportion of students than the proportion recommended in the ILP. This included literacy (33–71%), class vocabulary (11–54%), and other subject support (26–52%). In fact, most of the
proportions of students who received itinerant teacher activities were higher than the proportions of students who had documented ILP requests for such support, except for those for speech remediation, and social and behavioural needs.

When the ILP requests were compared with data from the SFs, there were low correlations between the ILP requests for language assistance and the language testing data, $r_s(28) = .19, p = .3$; also for the speech results $r_s(28) = .37, p < .05$; and literacy abilities, $r_s(24) = .43, p = .04$. There were also no correlations between the ILPs and the SF data regarding auditory skills, study skills, or academic abilities. Because SFs contained the results of standardised testing, these low correlations suggest that the ILPs were not valid or reliable indicators of student needs.

There were further doubts about the reliability of the ILP results because of the mismatch between the ILP request for cognitive assistance and the SF information indicating the presence of additional disabilities. Two students had a diagnosed cognitive disability, but cognition was not requested as a focus area in the ILP for them. Three of the five who did have cognition in the ILP had no reference to another disability, diagnosed formally or described. This sort of reference was not strictly necessary to request cognitive support, but it was not evident how the presence of an additional disability was addressed in the ILPs. This was because five of the seven students with a description of an additional disability had no reference to the disability in the ILP, even though a formal diagnosis of an additional disability was indicated. This lack of compatibility between the ILPs and the reports of additional disabilities in the SFs suggests caution in interpreting ILP results, particularly because the SF information was generally sourced from reliable written reports.

In summary, no significant correlation was found between the ILPs and the itinerant teacher activities provided, but doubts also exist about whether the ILPs were
reliable indicators of student needs. Even though ILPs generally contained requests for high levels of communication support; this was provided to most students but was not necessarily matched to individual ILP requests. There were also higher values for class support than were warranted from the ILPs.

4.5.3 The influence of language assessments.

The second research question (see Section 2.5.2, question 2b, i) specifically referred to the influence of language assessments on the teaching activities. Descriptions of the types of language assessments, the test person, and the test currency were presented in Section 4.3.3.1. Almost all students had received a documented standardised language test, generally administered by the current itinerant teacher. There was no quantitative evidence found, however, for a relationship between the documented linguistic abilities of the students and the amount and type of itinerant teacher activities. A general statement was possible, however, based on the composite activity of teaching language (see Table 4.4.2.1). That activity included developing language in either form: spoken or signed—and across various language aspects including speech, vocabulary, but not including conversation. This activity was provided to 93% of students at least weekly, and for an average of 28% of the support time. This indicated that most students received this support for over a quarter of their support time, independent of measures of language ability.

4.5.4 Summary of student influences on itinerant teacher activities.

The results from examining the influence of student needs, as presented above, were summarised into 10 areas, as shown in Table 4.5.4. Eight of these areas were taken from the listing of student needs used to structure Section 2.3 of the literature review.
Table 4.5.4  
*Correlations between Documented Student Needs and Composite Itinerant Teacher Activities*

<table>
<thead>
<tr>
<th>Student need</th>
<th>Type of itinerant teacher activity</th>
<th>Student Data Source</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language development,</td>
<td>Composite activities:</td>
<td>SF&lt;sup&gt;a&lt;/sup&gt; or ILP&lt;sup&gt;b&lt;/sup&gt;</td>
<td>A significant correlation found between use of explicit targets for spoken language and ILP requests for language assistance $r_s(26) = .39, p = .04$. Those students with language requests in ILP received more language teaching with explicit targets</td>
</tr>
<tr>
<td></td>
<td>- Developing language (spoken or sign, speech, vocabulary, conversation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Developing spoken language, using either integrated or explicit targets</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual activities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Spoken language with explicit targets</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Spoken language with integrated targets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditory skill development</td>
<td>Composite activity:</td>
<td>SF: listening ability</td>
<td>No significant correlations found</td>
</tr>
<tr>
<td></td>
<td>- Developing auditory skills using either integrated or explicit targets</td>
<td>ILP: audition skills</td>
<td></td>
</tr>
<tr>
<td>Assistance with hearing technology</td>
<td>Individual activity:</td>
<td>SF: FM assistance</td>
<td>No significant correlations found</td>
</tr>
<tr>
<td></td>
<td>- Assisting with hearing technology</td>
<td>ILP: FM assistance</td>
<td></td>
</tr>
<tr>
<td>Speech remediation</td>
<td>Individual activity:</td>
<td>SF: speech remediation</td>
<td>No significant correlation found</td>
</tr>
<tr>
<td></td>
<td>- Teaching speech</td>
<td>ILP: speech remediation</td>
<td></td>
</tr>
<tr>
<td>Literacy development</td>
<td>Composite activity:</td>
<td>SF: literacy ability</td>
<td>A significant correlation found between teaching literacy with itinerant teacher’s program and literacy ability in SF, $r_s(14) = -.62, p = .011$. Itinerant teachers provided extra literacy assistance for those with literacy delay</td>
</tr>
<tr>
<td></td>
<td>- Teaching literacy with program from class or itinerant teacher</td>
<td>ILP: literacy assistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Individual activities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Teaching literacy with class program</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Teaching literacy with itinerant teacher’s program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistance with vocabulary</td>
<td>Composite activity</td>
<td>ILP: assistance with vocabulary</td>
<td>No significant correlation found</td>
</tr>
</tbody>
</table>
4.5 Student Influences on the Choice of Activities

<table>
<thead>
<tr>
<th>Student need</th>
<th>Type of itinerant teacher activity</th>
<th>Student Data Source</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student need</td>
<td>Individual activity:</td>
<td>ILP: staff consultation</td>
<td>No significant correlation found</td>
</tr>
<tr>
<td>Staff consultation</td>
<td>• Consulting with staff</td>
<td>ILP: staff consultation</td>
<td>No significant correlation found</td>
</tr>
<tr>
<td>Assistance with study skills</td>
<td>Individual activity:</td>
<td>ILP: study skills</td>
<td>No significant correlation found</td>
</tr>
<tr>
<td>Assistance with social and behavioural development</td>
<td>Individual activity:</td>
<td>ILP: social skills or behaviour</td>
<td>No significant correlation found</td>
</tr>
<tr>
<td>Assistance with the class program</td>
<td>Composite activities:</td>
<td>SF: Academic ability</td>
<td>No significant correlation found</td>
</tr>
<tr>
<td></td>
<td>• Class program support</td>
<td>Ability in other academic subjects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Teaching directly supporting the class program:</td>
<td>ILP: Study skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Teaching literacy</td>
<td>Other subjects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Teaching other subjects</td>
<td>Literacy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with program from class</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>or itinerant teacher</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *Data sourced from the SFs. †Data sourced from ILPs.

Assistance with hearing technology (AHT) and providing consultation were added in response to the literature review of common itinerant teacher activities (see Section 2.2). Itinerant teacher activities that specifically related to these 10 areas of student needs were then identified, including the original 22 activities and related composite activities. Correlations were then examined between these 10 areas of student needs and the relevant itinerant teacher activities, together with the results.

Two significant correlations were found. Teaching literacy with the itinerant teacher’s program was negatively correlated with literacy ability, $r_s(16) = -0.62, p = .011$, indicating that students with literacy needs received more literacy support using the itinerant teacher’s program. ILP requests for language support had a low correlation with Teaching spoken language using explicit targets, $r_s(26) = 0.39, p = .04$. Those students with language requests in ILPs received more language teaching with explicit targets. Apart from these results, no significant correlation was found between the
student needs as documented in the SFs and the ILPs, and the itinerant teacher activities.

4.6 External Influences

The majority of the evidence for external influences was found by thematic analysis of the written and spoken comments of the itinerant teachers. The initial analysis was presented in Table 4.1.2 and will be referred to here, and then in Section 4.7 it will be integrated with the data from the surveys and SFs.

Two of the groups of influences in Table 4.1.2 concerned student needs; the other two were concerned with consultations and collaborations with people other than the students, and with accommodating to fixed boundaries, such as room noise and distractions, and itinerant teacher characteristics. The most frequently mentioned external influence was the class teacher, and it was second only to the influence of the language needs of the students. Parents were also frequently mentioned, with individual interview comments indicating that parental influence was rated by the teachers as a very important consideration. The following sections will present some statistical evidence on external influences, but the main descriptions of the influences identified by thematic analysis will be presented in Section 4.7, when the statistical and thematic analyses will be integrated and applied to the 11 different types of activities.

4.6.1 Influences from itinerant teacher demographics.

The literature review had identified itinerant teacher characteristics as being possible influences on the choice of itinerant teacher activities. Accordingly, rank order correlations were calculated for the relationship between the four demographic variables and the simplified list of 11 types of teaching activities. Thematic analysis had suggested that grade level may have interacted with teacher characteristics, so grade level was also included in this calculation. The results are presented in Table 4.6.1a.
There were no significant correlations between experience as an itinerant teacher and any of the activities, and only mild correlations between itinerant teacher qualifications and Hearing and sign support and Consulting with staff. This could be partly due to the few signing students requiring qualified itinerant teachers rather than casual staff. The significant negative correlation between itinerant teacher background and Consulting with parents, \( r(59) = -.46, p < .01 \), indicated that teachers with a teaching background with younger students were more likely to provide parent consultations, however, there is a suggestion that because grade level is also similarly negatively correlated with Consulting with parents, \( r(59) = -.42, p < .05 \), that grade level may be associated with teaching background.

Accordingly, Spearman’s rank correlation coefficient was calculated for three itinerant teacher variables (i.e., experience, qualifications, and teaching background) and grade level. The results are reported in Table 4.6.1b.

<table>
<thead>
<tr>
<th>Types of Activities</th>
<th>Experience as Itinerant</th>
<th>Qualifications</th>
<th>Teaching Background</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Auditory verbal teaching</td>
<td>.07</td>
<td>.21</td>
<td>.03</td>
<td>-.21</td>
</tr>
<tr>
<td>2. Class program support</td>
<td>.03</td>
<td>.04</td>
<td>.17</td>
<td>.30*</td>
</tr>
<tr>
<td>3. Hearing and sign support</td>
<td>-.18</td>
<td>-.29*</td>
<td>-.19</td>
<td>-.21</td>
</tr>
<tr>
<td>4. Consulting with staff</td>
<td>.05</td>
<td>.27*</td>
<td>-.10</td>
<td>-.26*</td>
</tr>
<tr>
<td>5. Teaching general vocabulary</td>
<td>-.08</td>
<td>.07</td>
<td>.05</td>
<td>.12</td>
</tr>
<tr>
<td>6. Teaching literacy/English with itinerant’s program</td>
<td>.01</td>
<td>-.13</td>
<td>-.06</td>
<td>.05</td>
</tr>
<tr>
<td>7. Consulting with parents</td>
<td>.05</td>
<td>.01</td>
<td>-.47**</td>
<td>-.42**</td>
</tr>
<tr>
<td>8. Teaching other subjects with itinerant’s program</td>
<td>.01</td>
<td>-.03</td>
<td>.13</td>
<td>.30*</td>
</tr>
<tr>
<td>9. Teaching a social/behavioural program</td>
<td>-.17</td>
<td>-.17</td>
<td>.22</td>
<td>.14</td>
</tr>
<tr>
<td>10. Presenting to school staff</td>
<td>.15</td>
<td>.08</td>
<td>.15</td>
<td>.22</td>
</tr>
<tr>
<td>11. Participating/organising review and planning meetings</td>
<td>.15</td>
<td>.18</td>
<td>.05</td>
<td>.02</td>
</tr>
</tbody>
</table>

*Note. N=59.
**p < 0.01. *p < 0.05.

Table 4.6.1a

*Rank Order Correlations Between 11 Types of Itinerant Teacher Activities and Itinerant Teacher Characteristics and Grade Level*
Table 4.6.1b
*Rank Order Correlations Between Itinerant Teacher Characteristics and Grade Level*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experience</th>
<th>Qualifications</th>
<th>Background</th>
<th>Grade level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience as an itinerant teacher</td>
<td>1.00</td>
<td>.70**</td>
<td>-.26*</td>
<td>-.14</td>
</tr>
<tr>
<td>Qualifications as a teacher of the deaf</td>
<td>.71**</td>
<td>1.00</td>
<td>-.21</td>
<td>-.22</td>
</tr>
<tr>
<td>Teaching background prior to itinerant teaching</td>
<td>-.26*</td>
<td>-.21</td>
<td>1.00</td>
<td>.59**</td>
</tr>
<tr>
<td>Grade level of students</td>
<td>-.14</td>
<td>-.22</td>
<td>.59**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note (N=59)*  
**p < .01. *p < .05.

There was a significant correlation between teaching background and grade level of students supported, \( r_s(59) = .59, p < .01 \), indicating that the itinerant teachers were more likely to be working in school grade levels similar to their teaching experience prior to itinerant teaching. This correlation explains only 35% of the variance, however, suggesting that itinerant teachers also worked in school settings that they had no recognised qualifications for or experience in, such as itinerant teachers with an infants’ teaching background working in secondary settings.

**4.6.2 The influence of different teacher strategies.**

The literature review had indicated that the itinerant teachers’ understanding of their role, philosophy, and beliefs may influence their selection of activities (see Section 2.4.6). Pilot studies had identified that some itinerant teachers preferred teaching with explicit targets, and others preferred integrating the targets with other activities (see Section 3.2.2). In particular, some itinerant teachers indicated that they taught subject matter independently of the class program, and others indicated that they preferred to use the class material. Accordingly, the five pairs of teaching activities where two different strategies were used to address the same need were examined. No significant correlation was found between the individual itinerant teachers and the amount of time or frequency of use of either member of the five pairs of activities.
The five paired activities were then examined to ascertain whether there was a statistical difference between the members of each pair. The correlations for the first four pairs are presented in Table 4.6.2. Not surprisingly, where auditory skills or spoken language were developed using explicit targets, they were also developed using integrated targets. Similarly, where literacy and vocabulary were developed using a separate program developed by the itinerant teacher, they were also developed using material from the class program.

| Table 4.6.2 Correlations Between Frequency Measures of Pairs of Itinerant Teacher Activities |
|----------------------------------|----------|----------|----------|----------|----------|----------|----------|
|                                  | AE  | AI      | SLE      | SLI      | LCP      | LIT      | VCP      | VG       |
| Auditory skills:                 |     |         |          |          |          |          |          |          |
| Explicit targets (AE)            | 1   | .87**   | .84**    | .88**    | .46**    | .68**    | .33**    | .64**    |
| Auditory skills:                 |     |         |          |          |          |          |          |          |
| Integrated targets (AI)          | 1   | .83**   | .93**    | .42**    | .64**    | .34**    | .64**    |
| Spoken Language:                 |     |         |          |          |          |          |          |          |
| Explicit targets (SLE)           | 1   | .81**   | .52**    | .69**    | .33*     | .57**    |
| Spoken language:                 |     |         |          |          |          |          |          |          |
| Integrated targets (SLI)         | 1   | .45**   | .64**    | .35**    | .69**    |
| Class literacy program (LCP)     | 1   | .55**   | .66**    | .68**    |
| Itinerant Teacher’s literacy program (LITP) | 1   | .40**   | .57**    |
| Class vocabulary (VCP)           | 1   | .64**   |
| General vocabulary (VG)          |     |         |

**p < .01. *p < .05.

Teaching literacy/English and Teaching vocabulary were taught either using the class program or the itinerant teacher’s program. Using frequency measures, both members of pairs were strongly correlated with each other, $r(57) = .55$, $p < .001$, $r(57) = .64$, $p < .001$, respectively. Interview data and written comments as presented above, however, indicated that different materials and activities were used for both pairs, so that the division of these teaching activities represents different activities to meet the same student need.

The frequencies of use of the two auditory skills activities were strongly correlated, $r(57) = .87$, $p < .001$, as were those of the two spoken language activities,
$r(57) = .81, p < .001$, indicating that students who received explicit skill development for audition or language were highly likely to receive integrated skills teaching in these areas. In both instances, however, more time was given to the integrated activities. The teaching of auditory skills with explicit targets used the materials and sequence from the ASP (Romanik, 1990), indicating that this activity was separate from teaching auditory skills with integrated targets, even if both were used with a similar frequency. The interview data showed that although the itinerant teachers used the framework of the ASP to inform their selection of listening tasks for the teaching of auditory skills with integrated targets, they chose materials from the class curriculum or general vocabulary rather than from the ASP. In other words, the same student need was addressed at the same level, but using two different sources of material.

With spoken language teaching, there was a similar higher frequency for the use of integrated targets, $r(58) = .38, p < .003$, suggesting a difference from teaching with explicit targets, but in contrast to auditory skills teaching there was little detail about the program or materials used for the explicit targets. With integrated targets, the interviews suggested that the main source of materials was the language used during regular classroom instruction and incidental conversations. In contrast to the more ordered selection of materials for auditory skills teaching, however, language teaching objectives arose from the frequent instances of students finding instructions or other communications in class to be incomprehensible or confusing (i.e., as observed by either the class teacher or the itinerant teacher). At the most basic level this included the new vocabulary of the subject; other confusions arose from a lack of general world knowledge, and from more complex sentences with difficult grammatical constructions.

The pair of Teaching other subjects activities did not have a significant correlation, but more time was given to Teaching other subjects following the class
program, \( t(58) = 3.27, p = .002 \), and it was provided at a higher frequency, \( t(58) = 2.27, p = .003 \), indicating that it was distinct from Teaching other subjects following the itinerant teacher’s program. Interview data also indicated that Teaching other subjects often involved teaching life skills, such as gaining a driver’s licence, clearly distinct from Teaching other subjects following the class programs.

In summary, even though analysis indicated that there were significant relationships between the proportions of time spent on some of the “paired” activities (i.e., indicating that increased time spent on one activity is likely to be associated with increased time on the other), there is sufficient evidence to support the view that these itinerant teachers viewed each part of these “pairs” as separate activities and that there were no individual preferences for one strategy over the other. Thus there is support for the notion that the 22 activities investigated here were viewed as important by different strategies, with some itinerant teachers addressing the same student need with different strategies, time, and materials.

One other aspect of teacher belief was the use of withdrawal for direct teaching. Examination of a scatter plot of teacher code and percentage withdrawal (see Appendix T) showed much variation in the percentage of withdrawal for individual teachers, indicating that the itinerant teachers varied their percentage of withdrawal according to the student rather than having a fixed policy that they applied to each student.

### 4.6.3 Influence from ILPs

ILPs had been identified as a possible influence and the SFs generally contained an ILP. Of the 28 SFs examined, 27 contained an ILP, but only 19 (68%) of those were prepared and ratified at a meeting with the itinerant teacher present. Two were missing this information. Five ILPs were prepared by the itinerant teacher only. These results suggest that although there was a systemic requirement for ILPs, the processes did not
always involve all stakeholders. In addition, with the requests for assistance found in the ILPs, it was not specified who was to provide the assistance: the class teachers, the itinerant teacher, the teacher’s assistant, the parents, or a combination of these. This further suggests that although the policy requirement of ILPs had the potential to influence itinerant teacher practice, there were indications that the ILPs were not effectively utilised this way.

4.7 Integrating Detailed Evidence of All Influences

Given the low sample numbers and high variability in the student needs and itinerant teacher activity data, there were few overall quantitative results. Consequently the results from all data sources were now integrated and presented in this section. These results included summary statistics from both quantitative and qualitative analyses and fine-grained data from individual students and teachers, from frequency distribution tables and box plots, and from consulting original data records. The framework of the 11 types of activities was used to structure the following presentation of results. The chief process used was to examine exceptionalities, which included those students or itinerant teachers who did not fit the general pattern; or had the highest or lowest measures; or in the case of low sample numbers, to examine each of the data points individually. In many instances, a specific interview comment or written comment was available to check each quantitative data point. This process also served as a check on the prior summary analysis. The results for this analysis of the influences on each of the 11 types of activities are summarized in Table 4.7.1 and detailed descriptions are provided following the table.
Table 4.7

Evidence of Influences on 11 Types of Itinerant Teacher Activities and Component Individual Activities

<table>
<thead>
<tr>
<th>Type of activity and/or component activities</th>
<th>Quantitative results</th>
<th>Qualitative results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1: Auditory verbal teaching (AVT)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Teaching auditory skills</td>
<td>• Higher hearing loss: more AVT.</td>
<td>Main influence on use of AVT was the daily encounters with student difficulties</td>
</tr>
<tr>
<td></td>
<td>• Independent of grade level</td>
<td></td>
</tr>
<tr>
<td>Component activities of auditory verbal teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Teaching spoken language</td>
<td>• Documented need in SF for most students</td>
<td>Strong influence of Auditory Skills Program on:</td>
</tr>
<tr>
<td></td>
<td>• Provided to most students</td>
<td>• Assessment</td>
</tr>
<tr>
<td></td>
<td>• Amount not correlated with need in SF</td>
<td>• Sequence of activities</td>
</tr>
<tr>
<td>c. Teaching speech</td>
<td>More use of explicit targets for those with ILP requests but overall, independent of ILP requests</td>
<td>• Daily student difficulties main influence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Some influence from standardised tests</td>
</tr>
<tr>
<td>Type 2: Class program support (CPS)</td>
<td>High CPS associated with:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Students with less withdrawal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Students with lower academic ability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Students in higher grade levels (although more variability in frequency)</td>
<td></td>
</tr>
<tr>
<td>a. Conversing with the student</td>
<td>Used with most students every week</td>
<td>• Often requested by all for pronunciation of new vocabulary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Infrequent remedial work- needed experienced, qualified, and confident itinerant teachers</td>
</tr>
<tr>
<td>b. Teaching the vocabulary of the class program</td>
<td>Secondary students received more</td>
<td>• Often due to requests by class teacher such as for weekly spelling lists, maths/other subject vocabulary</td>
</tr>
<tr>
<td>c. Teaching literacy with the class program</td>
<td>No statistical information available</td>
<td></td>
</tr>
</tbody>
</table>

Component activities of class program support

Student and/or class teacher often requests itinerant teacher support for:
• Class group for literacy,
• Assistance with student for literacy/English assignment
Table 4.7
Evidence of Influences on 11 Types of Itinerant Teacher Activities and Component Individual Activities

<table>
<thead>
<tr>
<th>Type of activity and/or component activities</th>
<th>Quantitative results</th>
<th>Qualitative results</th>
</tr>
</thead>
</table>
| d. Teaching other subjects with class program                                    | No statistical information available | • Student, class teacher, and school requests for specific subject assistance, especially in secondary,  
    |                                    |                       | • Provided to teach the language of maths, science, and social sciences                 |
| e. Teaching study skills                                                          | One itinerant teacher did most of this | Some parent requests                                                                 |
| f. Note-taking                                                                    | Only used for nine students.  
    |                                    | High values for four students in senior grade levels | Requested by student and school.  
    |                                    |                       | Itinerant teacher uses time to observe student and consult with class teacher         |
| Type 3: Hearing and sign support                                                  | Clustered because the four signing students also need higher AHT | Essential to optimise hearing, but many students manage hearing devices well  
    |                                    |                       | Signing support essential for four students                                          |

Component activities of hearing and sign support

| Type 4: Consulting with staff                                                     | Students with additional needs received more, partly because they had higher support hours.  
    |                                    | Otherwise evenly spread over grade levels | Highly valued by most itinerant teachers; needs active cooperation with class teacher  
    |                                    |                       | Some practical limitations from time, class teachers, and schools                     |
| Type 5. Teaching general vocabulary (TGV)                                         | Associated with higher hearing loss, and/or higher total support hours | Student need, constantly seen. Constant misunderstandings, limited student general knowledge lead to frequent need for TGV.  
    |                                    |                       | Younger students with greater language delays require sequenced presentations         |
Table 4.7

*Evidence of Influences on 11 Types of Itinerant Teacher Activities and Component Individual Activities*

<table>
<thead>
<tr>
<th>Type of activity and/or component activities</th>
<th>Quantitative results</th>
<th>Qualitative results</th>
</tr>
</thead>
</table>
| **Type 6. Teaching literacy with the itinerant teacher’s program** | Correlated with literacy needs in student file and with high support hours | Itinerant teachers supplement class program in order:  
  - To use more appropriate materials and texts  
  - To engage students at their literacy levels |
| **Type 7. Consulting with parents (CP)** |  
  - More CP with younger students  
  - Mostly weekly; monthly with older students.  
  - Older students with high hours receive fewer CP.  
  - Otherwise independent of total support hours |  
  - Some influence by more frequent presence of parents at school in younger grade levels and use of communication books.  
  - Assisted by email use |
| **Type 8. Teaching other subjects with itinerant teacher’s program** |  
  - Independent of total support hours  
  - No pattern evident, 20 students only, most in higher grade levels |  
  - Some related to students in segregated settings where itinerant teacher assisted with life skills.  
  - Other instances due to parent, school or student requests for alternative activities (cooking, driving licence) |
| **Type 9. Teaching a social / behavioural program** | Individual reasons.  
  - 15 students only, 6 with high totals.  
  - All students with high SBP have high support hours. |  
  - School requests for some students—challenging behaviour and social difficulties  
  - School request for in-class group work to assist social skills and literacy.  
  - Some assistance for deaf social events |
| **Type 10. Presenting to school staff** |  
  - Independent of support hours  
  - More likely for older students  
  - Usually annually  
  - Unqualified teachers did not generally conduct these |  
  - School request and school welcome essential for provision of in-services.  
  - Less need in younger grade levels due to easier, regular access to class teachers |
| **Type 11. Participating/organising review and planning meetings** |  
  - Independent of total support hours  
  - Itinerant teacher influence because 71% of itinerant teachers have these for all students, but others only with a few students  
  - Usually at least annually, often each term |  
  - School request and welcome essential but not always forthcoming.  
  - Some schools do not hold review meetings; Some schools do not invite the itinerant teachers. |
4.7.1 Auditory-verbal teaching.

Only five students did not receive A-V support; in all cases because of exceptional circumstances. One was a signing student who did not require it, two were senior students who may have benefited from it, but the itinerant teacher was not experienced in this area and provided class program support. The other two students accepted little support of any kind, so the rejection was unrelated to the specific type of teaching. Apart from these, all other students were provided with this assistance, matched to the available time. Most often A-V teaching consisted of some auditory skill work resulting from the influence of the ASP; some spoken language and new vocabulary support; and for those who needed it, some speech remediation. A-V teaching can thus be termed a general provision, because the use of this activity rarely depended on documentary evidence of student need.

There was evidence from the interviews that two commercial language programs were used for formative assessments and to guide programming. Both were used with younger students with language delays, or older students with severe delays. Five itinerant teachers used the St. Gabriel’s program (J. Brown et al., 2005) for this purpose, and four used the Bracken (2006) assessment test.

Eleven of the 14 itinerant teachers (79%) also referred to the CASL (Carrow-Woodfolk, 1999) test as guiding their selection of activities. They indicated that it set the overall importance of language assistance, and some initial targets, but was rarely referred to throughout the year. It was often done with a colleague, as Dawn explained:

I might have a colleague with me because we tend to like to do CASLs in groups, in a pair, so I’d be looking at the CASL results and using that to be able to influence what I was actually doing with her and how I would do it.
There were many references in the interviews to specific instances of misunderstandings by the students. These misunderstandings occurred in most sessions, and these provided the motivation and detail for many of the itinerant teacher activities, as Edna wrote, “She also has ‘gaps’ in language comprehension and vocabulary so needs one-to-one spoken language time.”

4.7.1.1 Teaching auditory skills.

Hearing loss had some influence on the teaching of auditory skills. A scatter plot indicated that students with mild hearing losses received auditory skill teaching infrequently, and those with profound losses generally received this teaching more frequently. As reported by the teachers, however, the higher levels of auditory skills teaching for some of the students with profound losses was related to an impending or recent cochlear implant.

Another possible influence was documented requests in the SFs. Data from the SFs indicated that 88% (n = 28) of students had some need for auditory skill development, 15% having a high need. Those results seemingly matched the results from the itinerant teacher questionnaire, which showed that developing listening skills, using either integrated or specific targets, was provided to 88% of students (N = 59) at least weekly, and was provided for an average of 21% of the support time. No significant correlation was found, however, between the documented needs for auditory skill development and the provision of auditory skills teaching. This indicates that auditory skills teaching was provided to most students, independent of documented needs.

Interview data supports the conclusion that the general provision of auditory skills teaching may have been due to the influence of the ASP, which was used with most students. Some itinerant teachers referred to the placement test available within the
ASP as guiding their selection of activities even though there were no placement test
details in the SFs. In general, there was no reliable documentation available either
related to the ASP or related to the students’ auditory skills abilities.

4.7.1.2 Teaching spoken language.

The documentary requests for language teaching were generally unrelated to the
provision of such, with almost all students receiving some spoken language teaching. A
box plot clearly showed similar mean frequencies of spoken language support for the
four levels of language ability, however, students with high average or above language
ability or a moderate/severe language delay showed greater variability in the amount of
spoken language support provided. The provision of language teaching to most students
suggests two questions. Why did some students with above average language ability
receive high levels of spoken language support, and why did some students with high
language needs receive only low levels of such support?

Visual inspection of the original questionnaires provided some answers. Student
A3 had a severe language delay but she was in a preschool, so only one hour a week of
support could be provided by policy (see Section 3.1.2), and this was play-based and
focused on a variety of student needs. Another student had high needs but no specific
language teaching. She was in grade 9 in a difficult class situation and required much
support with class work, so the itinerant teacher decided that language development
intervention would have to occur within the context of classwork.

The three students with high language ability and high support hours had
additional disabilities and attracted higher support hours. A high proportion of these
extra hours were used to extend their spoken language skills. One had just received a
second cochlear implant and needed more support, the vision impairment of another
student made the spoken language skills more critical.
One influence on the provision of spoken language instruction was that those students who had a specific request in the ILP received proportionally more Teaching spoken language with explicit targets, \( r_s(26) = .39, p = .04 \). Students who received higher overall hours of support also received higher proportions of language teaching \( r(59) = .39, p = .00 \), suggesting that the extra hours were partly allocated to allow for more language development.

There was a lack of coherence between the requests for language assistance in the ILPs and the documented language ability in the SFs. Six of the eight students who had above average ability also had requests for language assistance, as did three of the students with age appropriate language. The other 12 requests for language support in the ILP had documentary evidence of mild to severe language needs. One student had a significant and documented language delay, which was not mentioned in the ILP. Taken together, these instances indicated strongly that the ILP was not an influence on the provision of spoken language support, rather spoken language support was generally provided to most students. As the itinerant teachers reported in the interviews, this was provided as the need arose due to frequent, almost daily, instances of the students misunderstanding class material. This manner of directing the language support was supported by the school, parents, and itinerant teachers, as evidenced by the presence in the ILPs of requests for such support, independent of documented evidence of the language ability of the students.

4.7.1.3 Teaching speech.

The data on speech needs was confusing on first examination. A third of the documented speech needs in the ILP data and the SF data did not match. Half of the mismatches were because the ILP indicated a need, but the SF did not, and the other half were because the need was documented in the SF but not in the ILP. Interview data
suggested that it was standard practice for itinerant teachers to request that speech assistance be listed in the ILPs, in the absence of documented speech assessments, so that students could receive assistance in pronouncing new vocabulary. There were no instances, however, of a speech assessment indicating a moderate or severe speech need and the ILP failing to also report this. There were, however, four instances where the ILP did not report a mild speech need, although there was a speech need documented in the SF.

The interview data indicated that only a small number of students had evident speech errors that required systematic remediation. It also indicated that the most common form of speech teaching was teaching students how to pronounce new vocabulary that was first encountered in a noisy class or social situations. Four of the 14 itinerant teachers provided 49% of the speech teaching: three of the four were well qualified to do so, the fourth was simply teaching the students how to pronounce new vocabulary, as she reported in her interview. These four itinerant teachers generally provided speech teaching to all of their students. This was in contrast to other itinerant teachers who provided speech teaching to just some of their students. These results suggest a strong influence arising from either the teachers’ confidence with speech teaching or their understanding that their role included teaching the pronunciation of new vocabulary. Two teachers mentioned in interviews that, in spite of their TOD qualifications, they did not feel confident with speech teaching.

4.7.2 Class program support.

The average proportion of time for this support was 34%, but a quarter of this was conversation. When conversation was removed, the class program was supported formally for 25% of the support time. This type of class program support, as evidenced by the interviews and written responses, was commonly delivered with subjects
involving high literacy content, such as science or geography, although the language of maths was also a common area of support. The itinerant teachers explained that although it seemed that they were simply providing tutoring in the class subject, they were focused on teaching the underlying vocabulary and language structures necessary to understanding the subject matter at hand, and other subject matter encountered when the itinerant teacher was not available.

Sometimes class program support was at the explicit request of the class teacher, as Chris related:

So if they’re working in the class and the teacher says, “I want her to do this” and she says that quite a lot. She says, “I want her to stay here and I want her to do this” but the task is really beyond her reach.

In this instance such requests created a conundrum for the itinerant teacher, as she understood clearly that the class teacher did not understand the difficulty of the task, the ability level of the student, and the explicit teaching needed to meet the student’s needs. Itinerant teachers described in the interviews how they tried to use even this “wasted” time for the communication needs of the student. On the other hand, there were many comments about the class teacher utilizing the special skills of the itinerant teacher to support the class program, and to make the necessary adjustments for the DHH student. These seemed to occur, however, when the student had more developed language, literacy, and academic skills.

4.7.2.1 Conversing with the student.

All except five students received regular conversation with their itinerant teacher in addition to other itinerant teacher activities. When the five student exceptions were examined, they belonged to two itinerant teachers only, and in their interviews both itinerant teachers strongly supported the use of conversation for assessment,
communication practice, and engagement of the student. One spoke of the importance of using the time when walking down the corridor to engage in conversation. For these reasons, these zero values may have been questionnaire completion errors, or it may simply have been that these teachers took “conversing with students” to be implicit in other activities and that the wording of this question failed to elicit a distinction between general conversation and conversation as an explicit language intervention. It may reasonably be concluded that conversation was used with all students.

4.7.2.2 Teaching the vocabulary of the class program.

Secondary students received more of this support, $r(57) = .35$, $p = .007$, and the interview comments revealed that the itinerant teachers assisted the students to learn the vocabulary list of the subjects, and some itinerant teacher spoke about the importance of teaching the students the importance of continually extending their vocabulary. A very common example of this form of teaching was teaching either a spelling or the vocabulary list provided by a subject teacher. The itinerant teachers were quite clear about their role with spelling lists, however, as the following interview quote from Olive illustrates:

> But our role isn’t to teach the child to spell … the week before that spelling list is given out, we teach the children the words that are on that spelling list. So, if “acrobat” is on that list, then the child knows what an acrobat is before they get to having to spell it. So [we teach] the meaning, the understanding, the use in sentences. It’s the [class] teacher’s role to teach them to spell.

4.7.2.3 Teaching literacy with the class program.

The interviews confirmed this when the itinerant teachers spoke about regular support provided for the class spelling and writing activities in infants grade levels, and
regular assistance being given for difficult essay and reading assignments in secondary grade levels. *Teaching literacy/English with the itinerant teacher’s program* had similar results for all measures, just slightly below those for using the class teacher’s program.

The itinerant teachers spoke often about student and class teacher requests for support with class literacy groups, or assistance with student literacy/English assignments. This activity showed a strong influence from the class program, class teacher, and the choice of the student. Sometimes the support was provided because the class material was too difficult for the student, as in this example from Jill:

> In other classes … we see our students, sitting, listening to the literacy lessons and you come away and you know that you have to do it all over again with them, because with questioning, you realise, they weren’t taking it on board at all.

### 4.7.2.4 Teaching other subjects with the class program.

This was used with about half the students with the itinerant teacher often speaking about the importance of teaching the language of different subjects, especially maths. Some secondary students had requested help with specific subjects, especially in the higher grade levels, and the itinerant teachers spoke about providing this subject assistance but using the time to also assist the students with literacy and language.

### 4.7.2.5 Teaching study skills.

The only available data for student need of study skills were from the ILPs, but these did not match the provision of this activity. There were three requests for teaching of study skills in the ILPs of the 28 students, and two of the students received this assistance, one weekly, and one twice a week. Of the 25 other students who did not have study skill instruction in the ILP, 19 did not receive it, but 6 did: 3 of them weekly, one twice weekly, and the other three times per week.
The qualifications and experience of the itinerant teachers influenced the provision of teaching of study skills. Examination of the frequency distribution and the original data revealed that almost one-third of the students who received study skills support were from one itinerant teacher, with the total support by this one itinerant teacher representing 44% of the instances of this support. This itinerant teacher was a relief teacher with no TOD qualifications, and had been matched with students who would benefit from this type of support. The students may well have received this mix of assistance had they had a qualified itinerant teacher, so no valid conclusion could be made about the provision of study skills from the frequency data.

Student J4 illustrated the influence of parents with study skills. Student J4 was in year 9, and although the ILP did not have study skills listed, the student’s mother had asked her itinerant teacher Jill to assist with the student’s organisation of her assessment tasks. Jill only provided one-hour support weekly, and used 20% of it fortnightly for study skills. In this instance the source of influence was the parental consultation, with the consent of the student and school, and the documents were not relevant.

4.7.2.6 Note-taking.

Note-taking was strongly influenced by the choice of the student, the school, and the parents. It was used for only nine students, all of whom, except one, were in year five or higher. Five of the students for whom note-taking was used were in the last three years of schooling, and were those who received it frequently and with high support times. These students with high support times were those who had the greatest difficulty with hearing in the classroom because they had profound losses, had diagnosed auditory processing difficulties, or used English as a second language. One had poor attendance and engagement, and the school and parents had requested note-taking support. Itinerant teachers spoke about using Note-taking to provide high quality notes to students, to gain
an understanding of how the student was functioning in the classroom, as a way of checking in and consulting with the class teacher, and to assist with educational adjustments.

4.7.3 Hearing and sign support.

As explained in Section 4.4.2.2, this composite activity was derived from factor analysis as a result of the small number of signing students, who also had high needs for assistance with their hearing technology.

4.7.3.1 Assisting with hearing technology.

The finding that only 27% of students received assistance with hearing technology at least weekly indicates that this was a low need for the majority of the students. This finding is likely to be because of the competence and reliability of the Australian government providers of hearing aid technology, the competence and confidence of the parents and students, and the availability of cochlear implants and general technical support. The itinerant teachers reported, however, that the students’ FM systems had frequent technical difficulties and that students were often reluctant to use them. This may have been the main source of requests for assistance.

4.7.3.2 Teaching signing and sign interpreting.

Teaching signing and Sign interpreting was provided to 7% of the students. Some of these students also used spoken language and consequently three received high levels of A-V teaching. Each of these students also received Sign interpreting from a competent signing teacher assistant for most of their class time.

4.7.4 Consulting with staff.

All but five students received Consulting with staff. During the interviews, eight of the 10 itinerant teachers spontaneously referred to negotiating with the class teacher as being a source of influence on their choice of activities. Negotiating with class
teachers was the second most commonly mentioned influence on teaching activities mentioned by the participants in interviews, even though the time measures for this activity were low. Interview comments indicated that two schools did not welcome consultations and, with the other three students, consultations were impractical because of limited time or opportunities with both itinerant teachers and the class teachers.

4.7.5 Teaching general vocabulary.

Interview comments revealed that general vocabulary included a mixture of sequenced vocabulary programs and reactive teaching, which referred to the itinerant teachers responding to unplanned occasions when evident misunderstandings and confusion arose from the students’ restricted world knowledge and general vocabulary. The sequenced programs, in five instances with young students with delayed language, were taken from the structure of two different assessments, the St. Gabriel’s curriculum (J. Brown et al., 2005) and a Bracken test (2006) These tests were used to identify unknown vocabulary and language structures, and also to provide a sequence of instruction.

4.7.6 Teaching literacy with the itinerant’s program.

Less than half of the students were taught Literacy with the itinerant teacher’s program, but for those who did, it was for a relatively large 14% of their support time. Two examples of this were spoken about in the interviews: using alternative literacy teaching for students who could not learn from the class literacy teaching because it was so far above their ability, or the itinerant teacher selecting high interest texts to read together.

4.7.7 Consulting with parents.

Younger students received Parent consultations more often, mostly weekly; older students were more likely to receive monthly parent consultations. This may be
related to the significant correlation between the teaching background of the itinerant teachers and the provision of consultation to parents (see Table 4.6.1a), which meant that itinerant teachers who had a previous background in early childhood teaching were more likely to provide parent consultations. There was interview evidence describing this type of parent consultation where itinerant teachers had very frequent—at least weekly—conversations or written communications with the parents. They discussed what the parent could follow up at home, especially parents of a student in a pre-school setting. More support hours, however, did not translate to more consultations, except for some secondary students with high support hours. There was evidence that itinerant teachers had begun to use email for parent communication, but this does not show up in the time proportions.

**4.7.8 Teaching other subjects with the itinerant teacher’s program.**

Twenty students were taught other subjects with a program designed by the itinerant teacher, most often in the higher grade levels. Interview comments indicated some instances of *Teaching other subjects with the itinerant teacher’s program* were related to exceptional circumstances that required the itinerant teacher to select activities to engage the student, such as cooking and assisting with gaining a driver’s licence. As an example, one student would do any activity as long as it involved her favourite rock band.

For example, an itinerant teacher systematically worked through all the language of the primary maths textbooks for a student beginning secondary school because of a request from the student.

Exceptional activities, such as assisting with getting a driving licence or teaching general life skills, were other instances of the itinerant teacher providing the program. These exceptions were negotiated with the student, parents, and school and
they were designed to allow the itinerant teacher to engage with students who were in
danger of being alienated from school. The itinerant teacher used this interest to address
a variety of goals. Another example was provided by an itinerant teacher who described
the nature of her work with a teenager:

So, we have a discussion about what we're going to talk about and then
we plan it for the following week. So, I like to talk about things that
they're interested in. And so, she's very interested in dance and so we've
done a lot of discussion about dance.

This activity also referred to a life skills program used with some other students in
segregated settings where the students had additional disabilities, and the specialist
classroom teachers required assistance to integrate communication goals into life skills
activities. Overall, there was insufficient data to fully describe this activity.

4.7.9 Teaching a social/behavioural program.

All the students who had high support hours were taught a social/behavioural
program by an itinerant teacher. The higher support hours indicated that there was a
range of other student needs, as indicated by interview data. That group included
students with English as a second language, those with autism, and those with a severe
language delay. Also included in that group were students who chose not to wear
hearing aids and those with challenging behaviour. Some of the challenging behaviour
was considered by the itinerant teachers to be exacerbated by severe language delay,
and one itinerant teacher reported that she felt under pressure to quickly provide
language development intervention in order to assist the school to manage the
challenging behaviour.

Students judged by the itinerant teacher to have higher academic abilities often
received support for social skills by the itinerant teacher working with a small group of
students that included the DHH student. The itinerant teacher used this time partly to monitor and facilitate the social skills of the DHH student in situ, and partly to provide class program support.

4.7.10 Presenting to school staff.

Just over half the students received presentations to the school staff at least annually, and there was a significant correlation between grade level and the frequency of presentations to school staff, \( r(57) = .35, p = .006 \). This indicates that staff presentations were more likely to occur with secondary schools. This result is in agreement with interview reports that itinerant teachers had more frequent ongoing consultations with some class teachers for DHH students at pre-school, infants and primary grade levels. This suggests that there was less need for formal presentation for younger students. Other possible influences are from the qualifications of the itinerant teachers, because the three unqualified casual appointees did not conduct these presentations. There were also comments in two interviews about the school not welcoming or meeting the itinerant teacher, indicating that the provision of staff presentations is dependent partly on the policies of the individual schools.

4.7.11 Participating/organising review and planning meetings.

Visual inspection of the data indicated that the characteristics of the itinerant teacher had an influence on the provision of review and planning meetings. Ten (71%) of the itinerant teachers had these meetings for all students, at least annually; three teachers conducted them every term. In contrast, another three itinerant teachers accounted for eight of the nine students who did not receive this support, with half of those in senior grade levels, and the other half in middle primary years. In the interviews, most itinerant teachers spoke of review and planning meetings as an important general provision at least annually, and some regarded them as very important
means of conducting staff consultations. There was also some influence on the conduct of these meetings from the school, because there were two reports of schools holding review and planning meetings without inviting the (willing) itinerant teacher.

4.8 Summary of Results

The itinerant teacher activities were essentially about the need to communicate: both the communication needs of the students and the need for the itinerant teacher to communicate with the people who assist the students. This was the fundamental influence on the choice of itinerant teacher activities that emerged from both the thematic analysis and the quantitative analysis. The analysis was conducted, however, with a population of students with high variability, unusual exemptions, and individual cases that defied generalisations.

The itinerant teachers used 22 individual activities and these were able to be measured and described using frequencies of use or proportions of time, although the time proportions proved to be a less reliable measure. The 22 individual activities were able to be combined in a variety of ways to form composite activities. Some composite activities related directly to student needs, such as where two different strategies were used to address the same need. The 22 activities were also able to be condensed to 11 different types of activities using factor analysis. The three sets of teacher activity data (i.e., individual activities, composite activities, and types of activities) were then integrated to examine the relationships between support activities and both student needs and external influences.

Core activities were identified as *teaching of auditory skills, teaching of language, providing consultations,* and *providing conversation.* Conversations with students were found to integrate and inform all the support activities. There was always
4.8 Summary of Results

a tension, however, between the class curriculum and the language needs of the student. Consultation activities took little time but were provided to most students where possible, and other individual activities, such as a social/behavioural program, were provided to the students who needed them.

When SFs and ILPs were examined for influences on the choice of types of activities, only a few significant associations were found between the documentation about the student needs, and the type and nature of the support. These correlations were with language and literacy teaching. When the itinerant teachers’ comments were examined, however, some explanations for this low level of demonstrated association became evident, including the high variability, low sample numbers, and the unreliability of the information in the ILPs. The written and spoken comments also indicated that informal progress monitoring and observations provided frequent and consistent evidence of student difficulties with spoken, written, or signed communication, prompting immediate intervention activities. The systematic use of a designated auditory skills program resulted in the consistent provision of auditory skills teaching, and this activity was strongly supported by the itinerant teacher team and the supervisor. Some formal language assessment results were used to support language teaching with some students. Other influences were related to grade level, hearing loss, severity of needs of the student, class teacher, room noise, student differences, other disabilities, parents, and itinerant teacher abilities. Chapter 5 will discuss the relationship of these results in the context of the relevant literature, and will discuss the significance of the findings for the education of DHH students by itinerant teachers.
Chapter 5 Discussion

The study reported in this thesis set out to investigate the full range of influences on the support activities of itinerant teachers of students with a hearing loss, beginning with a detailed examination of the nature of the activities they pursued. It was prompted by theoretical questions about the use of direct teaching by itinerant teachers, which is part of the wider debate about the inclusion process for students with disabilities. The survey section of the current study used an expanded list of activities to provide comprehensive details on the work of ACT itinerant teachers. These activities were then compared with individual documented student needs. The results demonstrated that itinerant teachers in the ACT were primarily focused on the language needs of students, which they addressed by direct teaching activities and indirect collaborative activities. External influences on itinerant teaching were also explored, including policies, school environments, class teachers, parents, and the backgrounds of the itinerant teachers. The external influences and those influences arising from student needs will be examined following discussion of the support activities.

5.1 The Support Activities of Itinerant Teachers

The current study has provided detail that can be used to fill the gap in the literature concerning the direct teaching activities of itinerant teachers. The results, as reported in Table 4.2.2, demonstrated that 18 of the 22 activities that itinerant teachers employ are direct teaching activities, conducted on average for 89% of the support time (see Section 4.4.2.1). Of the direct teaching activities, 13 could be described in terms of interventions to habilitate specific documented student needs. Most previous studies of the support activities of itinerant teachers were confined to a list of five to seven activities (Hyde & Power, 2004b; Luckner & Ayantoye, 2013), most of which were indirect activities. One study included 10 teaching activities, but used frequency
measures based on the percentages of itinerant teachers who used each activity, rather than the percentage of students who received the activity (Alturki, 2002). There was thus no means of examining the relationship of the activities to the needs of the students.

The results from the current study are in substantial agreement with the Antia, Kreimeyer, and Reed (2010) list of activities that form the basis for the continuum of support model they put forward (Antia et al., 2010, see Figure 2.3.3a), but they extend the list by a further seven activities. The current study also examined the activities in more detail by examining some alternative strategies used for student needs, and by linking the activities provided to individual students with the documentation of the individual student’s needs. The current study also sought to distinguish language teaching from literacy teaching. Taken together, these extra findings may facilitate further research into language outcomes resulting from teaching activities of itinerant teachers.

Four aspects of the activities will be discussed, based on the results for their frequency and time measurements (see Table 4.4.1a and Table 4.4.1b), as well as the analysis of the qualitative data (see Table 4.1.2 and Section 4.1). The significance of the 13 different direct teaching activities that addressed specific student needs will be discussed first, followed by the indirect consultation activities. Two further original findings about the support activities will also be discussed: (a) the use of conversation as a teaching activity; and (b) alternative strategies used in pairs of teaching activities focused on single student needs.

5.1.1 Direct teaching activities.

No previous study has documented the consistent, frequent, and systemic use of direct teaching strategies that facilitate communication development by itinerant
teachers for this group of learners. The current study found that direct, explicit teaching of communication was employed by all of the itinerant teachers in the ACT to address a range of documented student communication needs, including developing listening, speech, and spoken language skills; and developing sign language skills. There had been studies of the effectiveness of A-V therapy, but as Eriks-Brophy (2004) noted, many of the studies were limited because they were retrospective with self-selected or limited samples, and were related to particular programs. Some studies were not necessarily with school students (Rhoades, 2006), or with school students served by itinerant teachers (Blamey et al., 2001). Other studies were with students with pre-existing good communication skills (Eriks-Brophy et al., 2006), or students with no additional disabilities (Luckner & Muir, 2001; L. J. Spencer, Tomblin, & Gantz, 2012). Studies with DHH students who had received cochlear implants included students from both mainstream and segregated settings (Geers et al., 2008; L. J. Spencer et al., 2012), but the outcomes were not examined for their association with teaching activities whether by itinerant teachers or other professionals (Fagan & Pisoni, 2010; R. Punch & Hyde, 2010).

The current study found that all itinerant teachers not only taught communication with almost all students, but that direct specialised teaching of communication was the primary activity. This finding was consistent across all data sources, across all measures of frequency and measures of time (see Table 4.1.1a and Table 4.1.1b), and across the results from the qualitative analysis of interviews and written comments (see Table 4.3 and Section 4.1). It was also consistent across students in public and private schools; in pre-school, primary, and secondary classes; and in segregated schools and segregated classes. This was a robust result in the context of an entire population with no exclusions due to additional disabilities or other
characteristics frequently used to exclude cases from previous studies. Nevertheless, the
generalizability of this finding is limited without replication in other educational
jurisdictions.

Previous studies with academically successful students in mainstream settings
(Eriks-Brophy et al., 2006; Powers, 2011) had suggested that highly developed
communication skills and itinerant teacher support were two of the conditions necessary
for academic success in secondary school. There was no evidence in those previous
studies, however, that itinerant teachers were necessarily teaching communication skills,
or that development of communication skills required the assistance of itinerant
teachers. The evidence in the current study of the teaching of communication skills by
itinerant teachers may provide a framework for further research to examine the
effectiveness of the strategies used for communication teaching in mainstream settings.

The other direct teaching activities that supported academic goals by teaching
vocabulary, literacy/English, or other subjects, had been previously reported (Foster &
Cue, 2009; Reed, 2003), although language skill teaching was often indistinguishable
from the teaching of the language arts (Antia et al., 2008). Some research and some
readily available advice for itinerant teachers could be interpreted as implying that the
teaching of academic content was the primary direct teaching task of itinerant teachers
(Clifford, 2008; Durkin, Jablonski, Kendrick, & Yang, 2008). This model of itinerant
teaching can be termed curriculum support because it involves teaching the same
concepts as the classroom teachers. In such cases, the itinerant teachers may be without
specialist subject knowledge but they have some knowledge of hearing aids, or use sign
language, or work on vocabulary. The strong support for the primacy of communication
teaching in the current study contrasts with this model, and also casts these previous
results of academic teaching in a different light. Qualitative data from the current study
suggested that itinerant teachers are providing academic support in a manner different from an academic tutor because their primary goals with the academic subjects were to: (a) facilitate language skills (including vocabulary); and (b) model for the class teacher the necessity of educational adjustments, and assist them to integrate these adjustments into their teaching styles and programs. As noted by Cameron (2005), such adjustments were designed to provide the students with better access to the class curriculum, and assist with rich classroom interactions that could contribute to the development of communication skills. This integration of communication goals with academic teaching was also illustrated by Reed (2003) who noted that, in regard to literacy teaching, “itinerant teachers do so much more than mere tutorial work with their students … I didn't realize that so many practices could be adapted effectively to the itinerant setting” (p. 342). To paraphrase this quote, the study demonstrated that communication teaching by itinerant teachers could be adapted effectively to support a variety of students in a range of settings.

The teaching of a social/behavioural program to a small group (20%) of DHH students in the ACT is in agreement with findings already recorded in the literature. There has been widespread discussion in the literature about the prevalence of social and behavioural difficulties with DHH students. Although more recent indications are that DHH students in mainstream settings may have less significant social and behavioural difficulties, there remain significant risk factors for a proportion of DHH students (Antia et al., 2011; Coll et al., 2009; Eriks-Brophy et al., 2012). Qualitative data from the current study indicated that some of these teaching activities were facilitating social activities for deaf students. These social activities were similar to deaf awareness activities reported by Luckner and Ayantoyne (2013), who also reported that up to a quarter of DHH students had deafness awareness as an IEP goal. Further
research may be able to inform more detailed descriptions of practices to separate out the social/behavioural activities from such the deafness awareness activities.

The other five direct teaching activities of the itinerant teachers in this study were related to general student needs. Four had previously been reported in the literature, namely study skills, assistance with hearing technology, note-taking, and interpreting (Alturki, 2002; Foster & Cue, 2009). The current study, however, used qualitative data to explain the reason for these services. Note-taking and sign interpreting, if required, were provided by teachers’ assistants. The itinerant teachers of these students also provided some of this support as a means to assess and monitor the students and class situations and to provide a context for the other support they provided to the students. In particular, sign interpreting was frequently used to practice and monitor sign language previously taught by the itinerant teacher. Study skills and assistance with hearing technology were not generally provided because many students had developed independent skills in those areas or were receiving assistance from elsewhere.

The direct teaching activities identified in the current study could be used in further research to examine the appropriateness of the various strategies and approaches so that itinerant teacher interventions can be evaluated against student outcomes. This is in line with recent statements from various researchers such as Powers (2011) in the UK, who was referring to the mechanisms of specialized teaching, when he stated that “experienced teachers of the deaf already have considerable insight into these matters of course, but research that has measured the effect of different teaching skills and strategies on deaf children’s attainments is lacking” (Powers, 2011, p. 93).

5.1.2 Indirect consultative activities.
The findings in the current study about the importance of the indirect collaborative activities are similar to those from previous studies (Hyde & Power, 2004a; Luckner & Ayantoye, 2013; Luckner & Miller, 1994). It would appear that itinerant teachers in the current study provided consultation and collaboration in a similar manner to those in the US and the UK, and to other itinerant teachers in Australia. This study provides support for theoretical arguments for inclusion that maintain that students with disabilities can benefit from educational inclusion in mainstream settings, provided that there is effective consultative support for mainstream teachers (Giorcelli, 2004). Consultation was highly valued by the participants in the current study and the main limitations to effective consultations were external: time constraints and individual differences in class teacher cooperation as found in previous studies (Kluwin et al., 2004; Luckner & Hanks, 2003). There were, however, two differences noted in the current study.

First, the amount of time spent on collaboration did not equate with the importance of those activities because, even though collaborations were often short or infrequent, they were highly valued by the itinerant teachers and were regarded by them as general provisions to all students. Second, the itinerant teachers regarded their direct teaching activities as part of the collaborative role rather than detracting from it, or as separate from it as the "mixed model" approach suggested by Hyde and Power (2004a, p. 64) may imply. There was evidence that the direct teaching activities supported the collaboration process in the following ways: (a) by monitoring student academic progress; (b) by demonstrating necessary teaching techniques and adjustments to the class teachers; (c) by assessing student language needs; and (d) by supporting the class curriculum through individual teaching of critical subject content.
The importance of collaboration was further evidenced by the key tension that emerged from the thematic analysis (i.e., integrating the language needs of the students with the demands of the class program). In summary, the itinerant teachers were acutely aware that one of their main roles was to foster what the review of the Australian DSE (2012) termed *educational inclusion*. They undertook this role in a collaborative manner, using a mixture of formal and informal consultations, and modelled curriculum adjustments for the class teachers.

**5.1.3 Conversation as a teaching activity.**

Conversation requires special reference because this was the first direct evidence in the itinerant teacher literature of its use as a teaching activity. It had not been listed as a teaching activity in previous research and was only included in the current study because of feedback from the pilot survey. References to conversation were rarely explored in previous research, with anecdotal reports of itinerant teachers reporting that time walking with the student to a withdrawal room was wasted time (Clifford, 2008). This contrasts with the views of itinerant teachers in this study who regarded conversation while walking as a very valuable use of time. Prior to and independent of the interviews, the itinerant teachers had recorded in the surveys that they used conversation extensively. Conversation was the most frequently used individual activity, used with 90% of students at least weekly—and had the highest average time proportion at 9% (see Table 4.4.1b). During the subsequent interviews and focus groups the itinerant teachers spoke highly of the importance of conversation and its varied purposes, including its use for general progress monitoring, modelling listening behaviours, integrating communication skills, and building relationships in order to engage the students with the teaching activities. The thematic analysis demonstrated that the itinerant teachers essentially saw themselves as facilitators of communication.
development and used conversation to monitor and assist with language development as recommended by Chapman (2000).

This widespread and thoughtful use of conversation warrants further examination, particularly given the extensive literature around using conversation for strategic interventions. Examples include using conversation for motivational interviewing in the social sciences (Barnett, Sussman, Smith, Rohrbach, & Spruijt-Metz, 2012), for second language learning (Lyster & Sato, 2013), as well as for natural language development (Chapman, 2000). There is also a wealth of research about enhancing the conversational interactions of parents and children (DesJardin & Eisenberg, 2007; VanDam et al., 2012), and pre-school workers with DHH children (J. Smith, Warren, Yoder, & Feurer, 2004), and using conversation in segregated schools for DHH students (Stone, 1988). A thorough study of the use of conversation by itinerant teachers could indicate ways to enhance the conversational interactions for improved practices and student outcomes.

5.1.4 Alternative strategies for the same needs.

Ten of the activities in the current study were paired in order to contrast different strategies used to address single needs (i.e., using different approaches or materials, see Section 3.4.2.4, Section 4.6.2 and Table 4.6.2). Each of the pairs examined had not been previously investigated or reported in the literature in this context, but their inclusion was a result of three influences: (a) research that suggested that itinerant teachers were continually under time pressure (Guteng, 2005; Luckner & Ayantoye, 2013; Luckner & Hanks, 2003); (b) suggestions from the literature that integration of teaching goals was not only practical but necessary for transfer of explicitly taught skills (Duncan, 2006); and (c) the results from the pilot studies where teachers consistently requested the option of activities that integrated different goals.
The results (see Section 4.6.2 and Table 4.6.2) validated the incorporation of this examination into the study, and they have implications for further research on the effectiveness of particular strategies. The first set of pairings contrasted both auditory skills and language as being either taught with explicit targets or integrated with other activities. The auditory skills and language pairings provided information for the debate in the literature about whether communication skills are best taught in isolation using direct, explicit, and sequenced instruction, or using naturalistic environments that demand the use of particular communication skills. As Cook (2000) argued, however, this contrast may not be realistic because many naturalistic activities, such as play and rhymes, are also artificial yet contrived to look natural, but nonetheless they are highly effective ways to facilitate language development. This division of approaches may reflect an epistemological division common to many teaching situations (P. M. Brown & Paatsch, 2010) and may thus be related to individual teacher preference rather than to influence from the needs of the student. There was no evidence, however, that this was the case when the teaching of language and auditory skills were examined in this study, because no significant correlation was found between individual itinerant teachers and either approach. In addition, auditory and language skills were taught using both approaches equally, and the itinerant teachers reported that this was because they valued a combined approach of using explicit instruction, and then transferring the developed skills into more realistic and meaningful situations, often using class program material and conversation.

The second set of pairings related to itinerant teachers using a similar combined approach to teach vocabulary, literacy, and other subjects. They combined the teaching of explicit goals with teaching using material taken from the class curriculum in order to engage the students and transfer explicitly taught skills to relevant class experiences.
There was an additional explanation, however, for using separate programs as well as the class program. The itinerant teachers often reported that class teachers were unaware of the real ability levels of the students, as reported consistently in the literature (Marschark & Hauser, 2008). The itinerant teachers therefore provided supplementary materials, often integrating communication goals into explicit teaching, such as the pronunciation of the academic vocabulary. Even though this may seem to indicate the necessity for more effective consultation activities, it could also be related to the failings of IEPs to adequately plan for the assessed needs of the students. Both possible explanations warrant further investigation by a careful study of the extent to which IEPs are based on documented needs, and by examining the extent to which the attitudes of mainstream teachers are influenced by the consultation and collaborative activities of itinerant teachers.

5.1.5 Quantifying teaching activities.

The results from the current study of itinerant teacher activities demonstrated the importance of describing the activities from the standpoint of individual students (i.e., the frequency with which activities are provided to individual students). Other possible data measures were teacher rankings of the importance of activities, measures of teachers’ time spent on activities, and the frequency with which the teachers pursue activities across all of their students. Previous studies generally examined the proportions of itinerant teachers using various activities (Alturki, 2002), rather than the proportions of DHH students receiving those activities. Such studies typically sought to quantify these proportions of itinerant teacher activities provided by using estimates of the time used or the frequency of use for each activity across all students (Luckner & Ayantoye, 2013). The results of such studies were useful for: (a) designing teaching preparation programs and in-service education programs (Luckner & Howell, 2002); (b)
supervising itinerant teachers (Teller & Harney, 2005); and (c) examining the working conditions of itinerant teachers (Luckner & Hanks, 2003). Because these studies were from the point of view of the itinerant teachers, however, they could not provide information that was able to be used to evaluate whether these support activities were necessary or effective.

Some previous surveys also asked the itinerant teachers to rank the perceived importance of the activities (Foster & Cue, 2009; Luckner & Ayantoye, 2013). The small ranking differences reported could be interpreted as indicating that most activities were deemed to be important. The ranking did not yield information to indicate why particular activities were chosen for particular students, nor whether the particular activities were necessary or appropriate. Rather than examining what experienced itinerant teachers might do in theory for “average DHH students”, the current study examined what they were doing with each DHH student. This focus on individual students enabled an examination of the link between the activities and the needs of each student. The current study also supplemented itinerant teachers’ responses to such individualised queries with interviews, so that the reasons for the choice of activities could be directly examined. The responses to some of those interview questions gave support to their choice. In practice, the itinerant teachers in the current study found it difficult to relate to abstract questions. They were positive and comfortable, however, in talking about individual students and explaining exactly what they were trying to do and why. This is in accordance with the counsel of Guest, Namey, and Mitchell (2013) that, “an in-depth interview is the method of choice for why questions” (p. 118). Importantly, in this case, the rich detail from the interviews served to validate the quantitative data from the surveys.
Other surveys in the literature had requested a large amount of student detail (Hyde & Power, 2004b; Luckner & Ayantoye, 2013). This requirement may have limited the participants to committed itinerant teachers who were confident with the time and detail necessary to complete such forms. Other surveys provided larger samples of teachers, but these were drawn from varied regions and educational jurisdictions (Foster & Cue, 2009). The current study used a brief self-report form and resulted in an almost complete population survey—100% of the itinerant teachers, and 97% of their students. The results were, unsurprisingly given individual differences among teachers, highly variable. However, when the general statistical analysis was combined with a fine-grained analysis of data, the exceptionalities in the data could be accounted for and overall patterns discerned.

In the current study, measuring actual activities required a choice of measuring the time used or the frequency of use for each activity. The final percentages could not readily be compared with the literature because the study results were the summaries of the activities received by the 59 students, rather than an estimated caseload average. Both time and frequency measures were recorded and analysed (see Table 4.4.1a and Table 4.4.1b), and each provided complementary information for some of the activities. Some activities, mostly the consultation and collaborative activities, required little time, giving an impression of a lack of importance. The frequency data, however, suggested that they were very important to the itinerant teachers, parents, and school. Itinerant teachers also found estimating times spent on activities to be quite difficult and inaccurate, especially for infrequent activities. Frequency measures were found by the itinerant teacher to be more easily reported and more accurate, however average frequencies masked the importance of some activities provided to a small group of students who had great need for them. This was the case with signing students; students
with difficulties with their assistive hearing technology; students with additional disabilities; reluctant students who needed exceptional subject programming; and students who had good literacy skills who required extra note-taking. In summary, this study suggests that quantifying the services received by individual students, rather than the average services provided by the itinerant teachers, could allow for a future examination of the appropriateness of these activities. The current study also suggests that using a combination of both the time and frequency measures is a useful strategy to obtain a full description of itinerant teaching strategies when coupled with qualitative data about the reasons for the choice of activities.

5.1.6 Selecting core activities.

The results of the current study (see Table 4.2.4a and Table 4.4.2.1) indicated that core itinerant teacher activities were a mixture of direct teaching and indirect collaborative support. The core activities consisted of teaching of auditory skills, teaching language; consulting with staff and parents; and conversing with the student. Conversing with the student was the most frequent individual support activity and interview comments indicated that it served to integrate and direct the majority of the support activities.

The finding that core activities for itinerant teachers were a mixture of direct teaching and collaborative support extends the findings of previous research (Hyde & Power, 2004a; Powers, 2002), which had not examined direct teaching in detail. It also extends the suggestions of some commentators (Furlonger et al., 2009), who had argued for the importance of consultative and collaborative activities but had not written about the importance of direct teaching. More recent theoretical responses to legislation have suggested the need for a broader range of models of itinerant teaching (Luft, 2008), based on student needs (Antia et al., 2010) rather than ideology. The current study
demonstrated that the majority (89%) of the itinerant teacher support activities consisted of direct teaching addressing documented student needs, but there was no suggestion that this high value lessened the importance of consultation. There was also evidence that direct teaching enhanced the collaborative and consultative role rather than detracted from it. For example, the itinerant teacher strategy of integrating communication teaching with class material served as a model for the class teacher and supported consultation comments. The itinerant teachers were also able to directly and explicitly respond to requests and suggestions from the class teacher, which enhanced a collaboration partnership. The direct teaching also provided a framework for involving the parents in both the communication teaching and in supporting the class program. Last, the itinerant teachers reported that effective direct teaching enhanced their credibility in meetings and consultations with school personnel.

The identification of language teaching as a core activity provided to DHH students in the ACT was not predicted by previous research. This was not surprising because of the limited detail about direct teaching services in previous studies. There had been many reports, from cochlear implant research, of the improvements in language abilities of DHH students during school years, but these had never been examined in connection with itinerant teaching (see for example Geers et al., 2008). Many studies had also demonstrated the critical importance of language abilities for success in a mainstream environment, including, for example, a study by Antia, Jones, Reed, and Kreimeyer (2009). Those authors concluded that “each of the communication measures, namely, teacher-rated expressive and receptive communication and student-rated communication participation within the classroom, was significantly correlated to math, reading, and language/writing achievement, as well as to teacher-rated academic competence” (p. 308). In view of such results, it is not remarkable that the ACT teachers
provided language teaching as a core activity. What is perhaps surprising, however, is that there is not more evidence in the literature of other itinerant teachers doing the same. The current results for language teaching were consistent across all data sources, using time and frequency measures, and thematic analysis. Language support was thus provided to almost all students independently of documented needs, although those students with greatest needs generally received the greatest number of support hours. Even students with above-average language skills received language support. This general provision of language assistance to all DHH students is in agreement with evidence from studies of academically successful DHH students in Canada and the UK (Eriks-Brophy et al., 2012; Powers, 2011). Those studies documented that not only did students need good communication skills to succeed, but they also needed support to maintain and develop those skills.

One of the possible reasons for this need for continual support for language development is the increasing evidence of the acoustic and language difficulties of modern classrooms (Dockrell & Shield, 2006; Flexer, 2004; McKellin, Shahin, Jamieson, Hodgson, & Pichora-Fuller, 2005; Nelson, 2000). The current study provides further support for this conclusion. Hearing students continue to develop their language skills as a result of the extensive opportunities for interactions during their school experiences. There is evidence, however, that the trend towards group discussions in classroom results in “noisy zones of proximal development [and that] the limitations imposed by noise pose a particular concern for young language learners in grade-school classrooms where the students’ language learning is a central concern, and students develop important social skills” (McKellin et al., 2011, p. 86). McKellin et al. also pointed out that such noise limitations are not tolerated for more advanced students when the intent is to convey academic content. Hence, for DHH students who are
simultaneously trying to learn academic content and develop their language, poor acoustic conditions are a major concern. Those concerns were mirrored in the interview comments of the ACT itinerant teachers and illustrated the difficulty facing DHH students who not only have to participate in classroom discussions to learn curriculum content, but also require such discussions to assist them in mastering complex language.

The current finding that providing consultation is a core activity is in agreement with the literature, with two minor differences. First, even though the time used and the frequency of consultation activities were slightly less than in other studies, there was no suggestion from the interviews that more time was needed. The second minor but related difference was that the provision of effective direct teaching was regarded by the itinerant teachers as an essential component of collaborative support. This suggests that an effective consultative and collaborative role necessitates that the itinerant teacher engages in credible direct teaching with the student. This latter finding from the interviews needs replication to be able to be generalised to other jurisdictions.

The finding that teaching auditory skills was a core activity was not predicted from the literature, even though there had been reports of its use in some situations (Alturki, 2002; Foster & Cue, 2009). Some previous studies had also indicated that auditory training was an IEP goal for up to 54% of students (see Table 2.3.1). There was also clinical evidence available to support the use of auditory training for hearing children (D. R. Moore et al., 2009; J. K. Moore, 2002); and support from research about A-V therapy (Eriks-Brophy, 2004) for DHH students. There was no indication, however, that it would be used so widely in a mainstream setting.

As presented in Section 4.4.2, auditory training was generally provided to all students, particularly younger ones, unless there was evidence that the student had completed the essential components of the program used by all the team (i.e., the ASP
by Romanik, 1995). The interview evidence, that many itinerant teachers had internalised the scope and sequence of this program, lends support to the notion that a well-developed program and set of materials assists teachers to effectively address student needs. This has implications for supporting effective language teaching, if an equivalent program could be provided.

5.1.7 Categorising activities.

The research question, 1a, sought a way to categorise the activities pursued by itinerant teachers. It was found, however, that there were multiple ways in which the 22 activities were able to be categorised (see Table 4.4.2.1 and Table 4.4.2.2c). The alternative categorisations provided alternative and complementary descriptions of the activities, able to be related to different influences. One example was to pair the two literacy-teaching alternatives in order to compare the literacy provisions with student literacy needs. Another composite activity combined the activities that used the class curriculum with those that used the itinerant teachers’ programs to examine the extent of the influence from the class teacher. The composite categories relevant to this study were provided in Table 4.4.2.1, and were used to compare the activities with possible influences.

Even though the survey began with 22 activities, factor analysis indicated that these could be condensed into 11 types of activities (see Table 4.4.2.2c). The first two types of activities, A-V teaching and class support, contained 11 component activities. The literature had already identified class support as a component of direct teaching, but the identification of A-V teaching, validated by means of close attention to the detail of the activities, supports the notion that itinerant teachers essentially see themselves as teachers who have a strong consultative role, rather than as consultants who sometimes teach. Detail from the original activities was also retained to assist with describing the
activities. In particular, previous surveys of itinerant teacher activities, as reviewed in Section 2.2, illustrated that the way in which categories of activities were selected had an effect on the results. Researchers had categorised and then surveyed the activities according to current research purposes. These research purposes were to promote inclusion (Hyde & Power, 2004a), to understand the teaching conditions of itinerant teachers, and to inform the design of teacher preparation programs (Luckner, 1991); important tasks at the time. Inclusion needed championing because as mainstreaming of DHH students increased, two concerns arose: (a) mainstream schools were slow to change and make the necessary adjustments to allow the effective inclusion of DHH students (Powers, 2002); and (b) itinerant teachers who had come from a background of segregated educational settings may not have provided consultative activities that were necessary to assist inclusion (Luckner & Howell, 2002). These concerns led to a research focus on the consultation activities of itinerant teachers and consequently a lack of attention to the direct teaching services. The categorisation used in these earlier surveys reflected these research priorities.

5.2 Influences from Students

Previous research into the nature of the relationship between student needs and itinerant teacher activities has been hampered by three restrictions: (a) limited detail about the activities that itinerant teachers provide; (b) limited availability of valid and reliable measures of student needs, particularly for DHH students in mainstream settings; and (c) a lack of evidence about possible confounds or other influences on the selection of teaching outcomes. The first restriction was the subject of the first section of this chapter, the last will be considered in the next section about external influences, and the restrictions relating to student measures will be discussed in this section.
The itinerant teachers in the current study chose their teaching activities in response to a number of influences: from legislation, colleagues, schools, class teachers, parents, and the physical environment. The dominant influences, however, were from the student needs. The significance of student needs will be discussed first, beginning with language needs, because these were perceived by the itinerant teachers as being both the most critical student need, and also as a need often unnoticed by other support personnel. There were three issues concerning each need: where was it in the hierarchy of needs; how was the need assessed and explicitly addressed, and was it additional to those encountered by hearing students?

5.2.1 Student language needs.

The current study provided evidence that the language needs of the students represented the predominant influence on the choice and extent of the teaching activities. The survey phase of the study demonstrated that language teaching was the predominant activity (see Table 4.4.2.1a), and the qualitative analysis found that the itinerant teachers regarded language teaching as a core activity (see Table 4.1.2). Those students who received higher support hours received a higher proportion of that time in direct language instruction.

As evidenced earlier in this thesis, there are strong theoretical arguments that itinerant teachers should be addressing student language needs. This area of student ability is a critical component of student engagement and success, and language skills are able to be remediated (see Section 1.2 and Section 2.3.1.1). Many itinerant teachers are qualified to carry out this role. Itinerant teachers’ qualifications contain course work in teaching language and communication skills (Luckner & Ayantoye, 2013; Luft, 2008), and itinerant teachers consistently provide direct teaching activities (Hyde &
5.2 Influences from Student Needs

Power, 2004b; Luckner & Ayantoye, 2013), which could be used for language habilitation.

In the current study, however, it was not only the 48% of DHH students who had moderate or severe language delays who received regular language development assistance (see Table 4.2.3a). Those students with average or above average language ability were also provided with language assistance in response to the language difficulties observed by their itinerant teachers and their classroom teachers. This additional language assistance, according to itinerant teacher reports, served to maintain and extend their language skills. The necessity for this additional support may be a consequence in part of the reduced classroom interactions, which were exacerbated by the poor acoustic and language conditions of classroom (see Section 2.4.4.3). The finding that language assistance was provided to almost all DHH students in the ACT, independent of documented assessments, was unable to be predicted by previous studies. The absence of information about language teaching in previous studies may be because: (a) no information on language teaching was available or collected, as previously discussed; (b) minimal language teaching took place by the itinerant teachers; and/or (c) reports of language teaching, when available, were for students with high needs (Antia et al., 2010). These possibilities are speculations, listed here to provide indications for further research that could examine the nature and extent of language teaching by itinerant teachers in other jurisdictions and with a range of students, including students with mild language delays.

Returning now to the documented language needs, it is difficult to directly compare the language abilities of the students in the current study with previous research samples, partly because of the limited availability of the results of standardised language tests in such research, and partly because of terminology confusion. Language
in some studies did not unambiguously refer to face-to-face language, oral or signed, as used in this study. In other studies (Antia et al., 2010), the definition is not clear but seems to refer to language as it may be defined in the regular school curriculum, as described by the terms language arts and literacy (i.e., relating predominantly to written language). Research with cochlear implants usually involved unambiguous language ability data, but the students sampled often had greater degrees of hearing loss or did not have other disabilities (for example Geers et al., 2008). In spite of these difficulties in comparing student language ability across studies, the students in the current study had similar communication difficulties to those described generally by other researchers (Luckner et al., 2012; Marschark & Spencer, 2010), and it is therefore not surprising that both the quantitative and qualitative analysis clearly demonstrated that language teaching is the predominant core activity of the itinerant teachers in the ACT.

What is surprising, however, is reports of itinerant teachers having very high caseload numbers in other jurisdictions, such as the 15% of Australian teachers who have caseloads greater than 40 (Hyde & Power, 2004b), and the average caseloads in one US study of 23 (Luckner & Ayantoye, 2013). It is questionable whether caseloads of this size would allow time for effective communication teaching, and it is unlikely that all the students served had such good communication abilities that they did not need to be taught communication skills. It may be that other professionals were providing the necessary specialised language teaching but there was no evidence of this. Another possibility, that the language learning needs of those students were not being met, would likely be in breach of legislation in both countries.

One last possibility for the lack of evidence for explicit language teaching by itinerant teachers could be the influence of a type of language immersion policy similar to that put forward for immigrant students learning ESL. Many ESL students initially
receive specialised language teaching and then further language development occurs by immersion in an English-speaking classroom. There is no evidence, however, that immersion in a language rich environment is sufficient for DHH students to learn language, despite arguments to the contrary (Cameron, 2005; Furlonger et al., 2009). ESL students typically have the dual advantages over DHH students of a developed first language and reliable hearing. Even with these advantages, ESL students take at least seven years to develop academic competence in their new language (Lyster & Sato, 2013). It could be inferred that DHH students would take longer, especially if they received no direct teaching of language. A further consideration is the evidence about the acoustic limitations in mainstream classrooms (Dockrell & Shield, 2006; Nelson, 2000), and the link between the acoustic limitations and the paucity of the available language models (McKellin et al., 2011; McKellin et al., 2005; Stelmachowicz et al., 2002).

The itinerant teachers in the current study reported that necessary components of communication development programs for their DHH students were a mixture of direct explicit language instruction and language instruction integrated with student interests, class curriculum, and general conversation. This leads to the question about the extent to which they used language assessments to guide their language teaching activities.

5.2.2 Language assessments.

Given the pre-eminence of language and communication in the current study—both in terms of identified needs and language teaching activities—it is perhaps surprising that the results did not reveal any strong associations between standardised language assessments and those language teaching activities. The possible reasons for this lack of association include: (a) limitations with the data from the SFs; (b) a reliance on the use of informal summative assessments as a type of continual progress
monitoring; and (c) the finding that language teaching was provided to almost all
students, independent of their documented needs, as discussed in Section 5.2.1.

There were limitations with the data on language needs from the SFs due to
inconsistencies in the ILPs and SFs (see Section 4.5.2), the smaller sample of students
(47%), and the diversity of available language assessments. The student appraisal
meetings and the ILPs in the ACT were based on assessments and evidence taken from
one particular school week, but as Stiggins (2004) asserted, it is a mistake to believe
that once-a-year decisions based on once-a-year standardised tests will improve student
outcomes. Stiggins (2004) suggested that teachers should pay more attention to the
instructional decisions made day by day in the classroom in order to make the
assessment more reliable and effective. He suggested utilizing a form of continual
progress monitoring to guide and direct explicit instruction in language and literacy and
other academic subjects. Examining the use of continual progress monitoring could
provide detail on the language teaching decisions of the itinerant teachers, rather than
examining only the results of standardised tests. The itinerant teachers spoke of their
informal methods for continual progress monitoring, although they did not use this
terminology. Their stated methods included ongoing monitoring and assessment
practices (daily or weekly) rather than consulting prior formal assessments. The
interview comments illustrated that these itinerant teachers had flexibility in responding
to student language needs as they arose. Given that this is the method used by ACT
itinerants, and in the absence of other research that addresses the connection between
language assessment and language teaching in mainstream schools, it would be
instructive to examine this process more carefully.

Moore (2008) recommended using the Response to Intervention framework,
and adapting what are termed “level one” interventions so that they arise from
“continual progress monitoring”. This is similar to the type of progress monitoring that is used in the Reading Recovery Program (Clay, 2002), which is in common use in Australia (i.e., the “running record” which is used in conjunction with “miscue analysis”). Given the critical nature of language facilitation, it may be useful to investigate the use of a similar formative and cumulative assessment process (e.g., a “running record” of language progress, incorporating a miscue style analysis of language errors or issues), which may then be used to guide daily and weekly language teaching activities. There is evidence that the itinerant teachers in the current study used an informal process of continual progress monitoring and language error analysis, without formally documenting it, just as experienced literacy teachers did before Clay (2002) formalized the procedures. Investigation of formal procedures for continual progress monitoring of language in an itinerant teacher setting would provide valuable insights into the nature and efficacy of language teaching by itinerant teachers in mainstream settings.

5.2.3 Listening and speech needs.

Auditory skill teaching was provided to over 80% of students annually and speech teaching to 64% of students annually (see Table 4.4.4a). The amount provided of each was approximately in proportion to the documented listening and speech needs (see Table 4.2.3b). It was difficult, however, to make valid conclusions about the influence of students’ needs for speech and auditory training because of the current situation of the lack of standardised assessments. In addition, as previously discussed, the use of the ASP in the ACT strongly influenced the provision of auditory skills teaching, independent of the recorded needs of the students. Furthermore, even though interview comments indicated that the itinerant teachers were aware of their individual students’ auditory training needs and specific instructional levels, the results of the
relevant ASP placement tests for the students were not generally recorded in the SFs. The estimates of the need for auditory training may still have been accurate, however, but caution must be exercised before generalising the results.

Speech teaching also lacked documentary evidence, but the itinerant teachers were confident that they knew which students needed speech remediation even if it was not documented in the student file. The student files typically contained only teacher reports of speech and listening needs (see Table 4.2.3b). In summary, the qualitative evidence for the link between itinerant teacher activities and students’ needs for speech and auditory skill development was unable to be verified by documentary evidence, but the itinerant teachers were in no doubt that they were attending to valid student needs in these areas.

Developing listening and speech skills was also influenced by the principles of A-V therapy, which promotes the development of speech and language through listening (Eriks-Brophy, 2004). The results of the factor analysis with the current study demonstrated that the itinerant teachers taught listening skills in conjunction with other activities in keeping with the principles of A-V therapy. Even though there were few explicit comments from the teachers about A-V therapy, the choice of teaching activities mirrored many of the recommendations of A-V therapy. Interview comments also indicated that teaching of language, speech, and vocabulary was based on providing an accurate acoustic model while teaching the students how to listen carefully and self-monitor. A good language model was reportedly difficult to achieve in classroom settings, however, because of the background noise. As already noted, many of the significant language cues such as /s/ and /-ve/ are more softly spoken, of shorter duration, and of a higher frequency than the stressed parts of spoken English (Stelmachowicz, Pittman, Hoover, & Lewis, 2001; Stelmachowicz et al., 2002). For this
reason, the reported background noise and reverberation levels present in most classrooms accessed by teachers in the current study would restrict access to accurate language input. The itinerant teachers reported that auditory skills teaching, matched and integrated with the class program and with the interests of the students, and delivered in a withdrawal situation, provided a more complete and accurate acoustic model than what was typically available in classrooms. This “awareness training” teaching strategy served to highlight the phonologic and language elements essential for speech, language, and literacy development, elements that were difficult to hear in most classroom situations. The itinerant teachers in the current study reported that they favoured quieter environments for spoken language facilitation strategies, and they also reported a number of requests by their students, particularly older students, for support to be delivered in quieter settings.

In summary, the frequent provision of listening and speech teaching in the ACT was related to informal assessments of the needs of the students, coupled with the availability of the ASP, and the common understandings of the A-V therapy approach to developing spoken language skills.

5.2.4 Assistance with hearing technology.

DHH students in the ACT who had greater hearing losses were more likely to receive assistance with their hearing technology, although some of this assistance was provided in response to requests by parents and audiologists. As presented in Section 4.3.3.3, the ACT had higher enrolments of DHH students with profound losses than was reported in some other studies, although not as high as the study by Eriks-Brophy and Whittingham (2013) who reported that more than 50% of the DHH students integrated into the schools in their survey region had severe to profound losses. The high values in
the ACT may have been due to the absence of segregated school settings and due to demand by parents for mainstream settings.

In spite of the higher level of enrolment of students with profound losses, almost half the DHH students in the current study did not require assistance to use AHT, and most of the assistance provided was related to either introducing a new hearing device or the use of the FM (see Section 4.5.1.3). Generally the use of FMs required much assistance because of frequent technical difficulties, student reluctance to use them, and occasional class teacher indifference.

Low levels of assistance with hearing technology was due, in part, to the availability of services from AH, which provides free ongoing hearing assessment, provision, and maintenance of hearing devices, including hearing aids, batteries, FMs, and basic maintenance of cochlear implants for children from birth to 26 years. Even though there are no educational audiologists working in government schools, the ACT is a regional centre for AH and so these services are easily accessible.

5.2.5 Academic needs.

The academic and literacy needs of the students influenced the itinerant teaching, but these issues took second place to the influence of the students’ underlying communication needs. There was only limited documentary evidence of the academic and literacy needs of the students (see Table 4.3.3.2 and Section 4.3.3.2), but the information that was available reflected their language and communication issues and needs (see Table 4.3.3.1a). Almost half of the students were below grade level in literacy and general academic subjects. These abilities are better than that identified by Lucker and Ayantoyne (2013) in the US, where 63% of the students were reading at least one year behind their hearing peers. Differences in assessment and reporting procedures and low sample numbers in the current study, however, make direct
comparisons tenuous. It is possible, however, that a replication that examined student academic and literacy outcomes from standardised tests could provide useful information concerning the effectiveness of itinerant teacher support.

Reliable literacy outcomes measures have been more readily available in a number of studies about literacy for DHH students (Luckner et al., 2005/2006; Schirmer & McGough, 2005). Similar results were not available in exclusively mainstream settings until the recent use of mandatory state-wide assessments results in which the tests recorded the presence of disabilities with the students (Easterbrooks & Beal-Alvarez, 2012). Mandatory external assessments are conducted in Australia, but as yet there has been no disaggregation of the DHH student data from the overall data set. Future research that uses this information may make an important contribution to an examination of the specialised needs of DHH students.

In the current study, the needs of the DHH students for academic and literacy assistance were not enough to make such support a core activity. This may have been because the itinerant teachers saw their role as pre-teaching the language and vocabulary used in the classroom, thereby enabling the students to learn the class curriculum from the class teacher directly. This is particularly evident with the teaching of the spelling list, in which the itinerant teachers consistently reported that their role was to teach the meaning of the words so that the class teacher could teach the spelling. This definite understanding of the difference between the itinerant teacher’s role and that of a class tutor is missing in the research literature, even though it had been noted—indeed, recommended—by experienced itinerant teachers (Bullard, 2003; M. D. Smith, 1997). Results from the thematic analysis and the relative frequencies of the surveyed activities indicate that the itinerant teachers in the current study understood that their
role was to develop the communication skills of the students, so that they can learn academic content from their class teachers.

In spite of this understanding of the separation of roles, the itinerant teachers in the current study also undertook some independent teaching of literacy and academic subjects. The thematic analysis indicated that this was partly because the class teacher was sometimes unable to sufficiently differentiate the class curriculum to cater for the skill and interest levels of the students. Other class teachers, however, were able to differentiate, and there were many examples of this in the interviews (see Section 4.6.3.3).

5.2.6 Student choice and student differences.

Individual student characteristics had a strong influence on the choice of activities, as indicated primarily by the thematic analysis (see Table 4.1.2). This was illustrated by the personal choice of the students; by the need of the students to be engaged, by anecdotes of students who were at a severe risk of disengagement; and also by the documented social and behavioural needs of the students.

The itinerant teachers encouraged the students, particularly the older ones, to negotiate the type and manner of support required, but they were also conscious that their students developed independence. As an illustration of how this tension worked in practice, the itinerant teacher Jill reported that she had recently had the following conversation with a secondary student:

You have a maths teacher who is expecting you to ask questions. So, you know, instead of sitting on it four days until I finally get here, you need to ask your maths teacher, “So why don’t we go now and see if they’re there?”
The student had chosen work that she wanted assistance with, and such student choice is in accord with other studies of academically successful DHH students, (Luckner & Muir, 2001; Powers, 2011), but she also needed to learn self-advocacy skills. Student choices were often direct requests for assistance, or indirect choices by disengaging. In these latter cases, the itinerant teacher had to choose activities and materials that engaged the students.

Teaching a social/behavioural program was strongly influenced by the characteristics of the student. There was evidence that schools requested extra itinerant teacher support to teach communication to students who had social or behavioural difficulties that limited their access to class activities. Often these were students who had severe language delays, and often other disabilities, including autism. In the current study, 30% of the DHH students had multiple disabilities, which is consistent with the earlier reported Australian proportion of 27% (Power & Hyde, 2002), and the US figures of 31% (Luckner & Miller, 1994) and 35% (Luckner & Ayantoyne, 2013). Evidence from the interviews suggests that staff from both the mainstream schools and the segregated settings requested itinerant teacher time to assist with developing a communication program with these students, while assisting the class teachers to make the necessary adjustments because of the hearing loss. This assistance is similar to that provided to DHH students without additional disabilities, except that segregated settings often had higher staff ratios due to the presence of a teacher assistant or lower class numbers. Classroom personnel frequently provided direct teaching in segregated settings rather than the itinerant teacher.

Studies of theory of mind and deaf children (Courtin et al., 2008; Schick et al., 2007), and earlier cited studies showing the link between mental health disorders and communication difficulties, support the view that communication facilitation by the
itinerant teacher is a valid, valuable, and valued role, especially with students with additional disabilities (Coll et al., 2009; Most et al., 2010). This was the case in the current study, where itinerant teachers reported that schools expected them to assist with engaging the DHH students with additional disabilities, and assist the students with their communication skills.

5.2.7 Grade level.

There was some influence on teaching activities from the grade level of the students. Students in secondary schools received more class support, less teaching of auditory skills with explicit targets, and fewer consultations with parents. These small but significant differences were partially due to the ACT secondary schools having a subject allocation of three general study sessions per week. The DHH students used this time to receive itinerant teacher support in a manner negotiated with them, which most frequently included tutorial assistance for the class program, and assistance with communication skills. This example of typical negotiations with secondary students illustrated a common theme throughout the interviews, that the itinerant teachers encouraged independence and self-advocacy with the students, an approach demonstrated to be associated with academically successful DHH secondary students in Canada (Eriks-Brophy et al., 2006). There are few references to the influence of grade level in the literature, although a survey by Eriks-Brophy in 2013 suggested that grade level had no effect on the attitudes of class teachers towards the inclusion of DHH students.

5.2.8 Summary of the influences of student needs.

This study has provided comprehensive detail of the full range of specialist direct teaching activities and has sought to describe them in terms of the needs for specialist interventions of the students. This suggests that assessments of these needs
could be used to set explicit goals, to develop sequences of instruction and teaching strategies, and to evaluate the results of the interventions (Hudspath-Niemi & Conroy, 2013). Evidence of the use of this assessment-based teaching approach is available from some jurisdictions (Colorado Department of Education, 2004) and is common practice for TODs in segregated settings. Assessment-based teaching may be used by itinerant teachers but, apart from research by Luckner concerning literacy and vocabulary (Luckner & Cooke, 2010; Luckner & Handley, 2008), there is little specific evidence in the literature about the direct teaching practices of itinerant teachers. Similarly, there is an absence of research that evaluated such teaching against assessed student needs. There is also little detail about the actual strategies used, programs followed, and the formative and summative assessments used to guide the teaching activities, except for the specific case of literacy interventions (Strassman & Schirmer, 2013). Two prospective research models, however, provide ways to link student needs with direct teaching activities.

The results from the current study provide partial support for two research models of the relative importance of communications skills and academic skills in mainstream settings; a cascade of benefits model and a continuum of support services model (Antia et al., 2010; Summerfield & Marshall, 1999). Both of these models provide strong support for the direct teaching role of itinerant teachers. The current study extends the continuum of support services model by clearly specifying the critical role of language teaching, as distinct from language arts or language taught solely within the context of the class curriculum. It also extends the cascade of benefits model by demonstrating that consultation is a core support activity, and that addressing DHH student needs in a mainstream environment requires considered collaboration and consultation.
Both of those models suggested that there was a hierarchy of needs (Reed et al., 2008; Summerfield & Marshall, 1999), and the results from the present study support this hierarchy. It can be inferred from these two models and from research with academically successful DHH students (Eriks-Brophy et al., 2006; Powers, 2011) that itinerant teachers would be best employed addressing underlying specialist needs, in conjunction with a consultative role. The evidence from the current study strongly supports the direct teaching role of itinerant teachers for underlying specialist communication skills. The current study also found that direct teaching activities enhanced and facilitated the consultative and collaborative role. Consensus on what comprises specialist needs is required, however, similar to consensus on the expanded core curriculum for students with vision impairment (Iowa Department of Education, 2010). Agreement on the core curriculum for DHH students would assist schools to provide the necessary specialist teaching to enable access to the curriculum. Certainly there is clear evidence that such specialist teaching is currently being provided by the itinerant teachers in the ACT.

5.3 External Influences

Itinerant teachers in the current study had to balance the needs of their students with a range of other influences arising from legislation, schools, assessments, parents, and their own needs. As research in Canada investigating academically successful DHH students reported:

Key stakeholders include the child with hearing loss, the family, the itinerant teacher, the school administration, the classroom teacher and peers with typical hearing … the findings of this research indicated the importance of factors external to individual children
with hearing loss in preparing for their inclusion in the regular class
(Eriks-Brophy et al., 2006, pp. 81,82).

Legislation has been added to the above quoted list, because legislation can result in policies that set the context for the school environment, which will be discussed before considering the other listed stakeholders as influences.

5.3.1 Legislation and policies.

Three elements of legislation or policies were shown to have particular influence on itinerant teaching in the ACT. These were: (a) legislation that led to all DHH students being in mainstream settings; (b) administrative requirements including ILPs; and (c) a local policy that supported the use of the ASP.

Legislation that supported the inclusion of DHH students led to national and regional policies that changed the demographics of DHH students in mainstream schools, as illustrated in the UK (Powers, 2002). Partly due to this legislation, itinerant teachers had to address the full range of student needs with the DHH students they supported in the ACT. Some of these students were in special education settings because of additional disabilities, and received support in those settings from the itinerant teachers. Consequently the itinerant teachers had to accommodate a highly varied caseload but the majority still clearly saw themselves as facilitators of communication development in whatever setting they worked.

There was little direct evidence of other policy influence at a national or regional level, although some of the terminology of the Australian legislation was evident in the comments of the participants: some itinerant teachers used the term inclusion; many spoke of providing access, although they more often called it participation and engagement in the class curriculum; and many spoke of adjustments—all of which are
terms that are used in the DDA and/or the current national educational standards, the DSE ("Disability Standards in Education," 2005)

Some of the more notable administrative procedures arising from national and regional policies in the ACT were the requirements for the student appraisal meetings; ILPs and associated review meetings; and also for a range of assessment schedules including annual standardised language tests, criterion-referenced auditory skills tests, speech tests, and participation in mandatory national academic tests. Administrative influences were evident in the commonly provided activity (to 85% of students) of Attending/organising review and planning meetings. Conversely, some of those administrative procedures were influenced by the individual schools and itinerant teachers. Two of the 14 itinerant teachers, who were also the least qualified and experienced, rarely participated in review meetings and some individual independent schools chose not to involve the itinerant teacher in the planning and review meetings.

Another policy influence came from the availability and structure of the ASP (Romanik, 1995), which itinerant teachers in the ACT have expanded to include frequent use of integrated targets. The widespread use of the ASP was evidence that instructional policies at a system level had significantly influenced the itinerant teachers’ choice and delivery of activities. Notably, although the ASP program has also been used extensively in NSW, as yet there has been no evaluation of its use or effectiveness.

5.3.2 Individual learning plans.

In theory, ILPs direct learning activities that address documented student needs but this was not the case in the current study. Some Australian research conducted since the commencement of the current study has also demonstrated that ILPs are not necessarily influential in other Australian jurisdictions (P. M. Brown, 2013). The ILPs
in the current study did not match the data from the student AM reports, nor from the SFs, and they showed little connection with the itinerant teacher activities.

There is a variety of situation-specific explanations for the difficulties with the ILPs in the current study. There was a lack of access by the school to some of the student assessments, particularly specialist speech, language, and listening assessments; and approximately 30% of the ILPs did not involve the itinerant teacher in their creation (i.e., they were entirely devised by school-based personnel). In contrast, some ILPs were prepared only by the itinerant teacher, and contained highly specific requests for assistance with audition, speech, and language, even though these needs were not identifiable from the student records. Another possible reason for the mismatch between itinerant teacher activities and ILP requests may be the involvement of other personnel. In some cases, teachers’ assistants were used to assist DHH students with behavioural needs, and some students received speech therapy from speech-language pathologists organised by the school or the students’ parents. There were reports in the interviews of the involvement of external speech pathologists but there were no records of this in the SFs, apart from some language assessments. Interviews revealed, however, that the younger students were more likely to have been receiving speech, listening, and language therapy from external agencies. Even if there was support from other agencies, a comprehensive ILP should have recorded this. Nevertheless, the absence of documented involvement of other personnel may well account for some of the discrepancy between ILPs and practice, if those other personnel were engaged in interventions that were perceived to be addressing needs that were identified in the ILP. The whole question of the role of other support professionals and their relationship with itinerant teachers is one that is worthy of further consideration. This issue has particular importance in the context of the current move in Australia toward person-centred
provision of disability support services under the new National Disability Insurance Scheme (The National Disability Insurance Agency, 2013). Under that scheme people with disabilities will increasingly be able to access support services directly, with the potential for several services to operate independently of each other.

The lack of coherence between ILPs, SFs, itinerant teacher beliefs, and mainstream school procedures, as also found with the P. M. Brown (2013) study, raises questions about the efficiency of ILPs in Australia—especially as a medium for reviewing student progress, staff roles, and intervention strategies for DHH students in mainstream educational settings. These are the roles mandated for IEPs in the UK (UK Department for Education and Skills, 2004) and the US (Luft, 2008). There are signs, however, that ILPs may become more effective in Australia because the recent review of the DSE in Australia (Department of Education and Training, 2012) contained a recommendation that schools be required to provide ILPs for students in schools. In summary, ILPs in the ACT and in other areas of Australia would benefit from a review of their policies and procedures to include many of the features that are mandatory in other countries.

5.3.3 Class teachers.

Providing class support was the second-most frequently used type of activity, and was mediated through the requests and materials provided by the class teacher. There was also very strong evidence from the thematic analysis of the influence of the class teacher (see Table 4.1.2). Some of the less-experienced teachers virtually ceded all authority to the class teacher and seemingly ignored some student language needs that they had addressed intensely with the same student the year before. This was rare, however, although most itinerant teachers were aware of the constant and necessary tension between the demands of the class program and the demands of the
communication needs of their students. The overall positive view of the attitudes of the class teachers supported the findings from a Canadian study (Eriks-Brophy & Whittingham, 2013) of classroom teachers of DHH students. The classroom teachers reported that the comprehensive support provided by itinerant teachers was a significant influence on their confidence and competence with the mainstreamed DHH students.

There were many examples of integration of communication needs and the class program, such as with literacy tasks, spelling lists, pre- and post-teaching of vocabulary, and assistance with assignments. These activities are similar to those suggested by Luckner (2010) and Luckner and Cooke (2010), however the itinerant teachers in the current study also consciously used the activities to develop communication skills and to sensitise the class teacher to the specialised needs of the students.

The literature for second-language teaching, however, suggests caution with integrating language and content learning. It suggests that difficult grammatical structures are best learned using familiar situations and vocabulary (Lyster & Sato, 2013) rather than with new and difficult academic content and language. This supports the balance evident in the activities described by the teachers in the current study between language teaching using explicit targets in easy and familiar environments, and language teaching that transfers these skills to the class content.

The influence of the class teacher was also evident in reports of the class teacher not being fully aware of the difficulties of their spoken and written material, as discussed by Marschark and Hauser (2008). When such misunderstandings occurred, itinerant teachers reported that they either retaught the lessons or they provided supplementary material. Evidence of this was in the frequent use of teaching literacy with the itinerant teacher’s program. This activity was related in part to the itinerant teacher needing to supply literacy material that was more suited to the students’ needs.
There were also examples reported of class teachers insisting on the itinerant teachers pursuing what they believed to be inappropriate activities. In general, however, the itinerant teachers reported few instances of resistance by classroom teachers. According to the perspectives reported through the interviews, the exceptions were due to two reasons: (a) the invisible nature of the difficulties faced by the DHH students (i.e., the lack of awareness or understanding of the particular needs of the student by the classroom teacher); and (b) a lack of enthusiasm to consult and make necessary adjustments on the part of secondary school teachers (i.e., relative to primary school teachers).

5.3.4 Collegial and itinerant teacher influences.

There was evidence that inexperienced or unqualified itinerant teachers in the ACT were often influenced and supported by their experienced and qualified colleagues. The inexperienced teachers frequently commented on the support they received from the other teachers, and the way in which they were guided in their selection and use of particular activities. This is in agreement with research that showed that itinerant teachers learned most of their skills (65%) on the job (Foster & Cue, 2009). Interview comments indicated that the caseloads of the inexperienced itinerant teachers were matched to their capabilities, as did the correlation between the teaching background of the itinerant teachers and grade levels of their students. The overall results, however, indicated a convergence of both views and practices between the inexperienced and unqualified itinerant teachers, and the teachers who were qualified and experienced. This convergence strongly supported the notion that the individual itinerant teachers were influenced by the team ethos and regional policies. The team cohesion and collaboration was supported by weekly team meetings, a common staff room for preparation and resources, clearly defined policies, some common programs,
and leadership from an executive teacher who insisted to all concerned that the itinerant teachers had “core activities—audition, speech and language”.

The choice of teaching activities was essentially unrelated to differences between the itinerant teachers. Some exceptions to this were that some itinerant teachers were more confident teaching speech and presenting in-services, and some had few review meetings. Others were more confident teaching in particular primary or secondary school settings, but there was evidence that both judicious caseload allocations by the supervisor, and support by the team, were used to accommodate limitations of individual team members.

There have been suggestions that the use of specific teaching activities by itinerant teachers may have been influenced by individual philosophies that tended to be either positivist or constructivist (P. M. Brown & Paatsch, 2010) (see Section 2.4.2.2). These alternative paradigms were identified among the itinerant teachers in the current study also. In interviews, some of the itinerant teachers indicated that they were more comfortable using the standard ASP even if the class teachers or students had requested other activities (i.e., a more positivist approach). Other itinerant teachers were more constructivist and enjoyed responding to the student needs as and when they arose. As Chris said, “I’m sort of a bit intuitive, like I have all these things in the back of my head and then I sort of operate intuitively where I’m at really.” It would be interesting to compare the itinerant teachers’ beliefs and their activities to understand more fully the influence of teacher philosophy. Apart from these interview comments, however, there was little evidence from the surveys that the teaching practices varied markedly according to the individual philosophies or ideologies of the itinerant teachers.

5.3.5 Parents and caregivers.
The literature has shown that parent involvement is vitally important for DHH students to be academically successful (Eriks-Brophy et al., 2006; Luckner & Muir, 2001; Powers, 2011). Parent involvement is also a vital component of most early intervention programs (Moeller et al., 2013), and approximately a third of the parents in the current study received weekly consultations from the itinerant teacher (see Table 4.4.1a). The influence of parents in the current study was also clearly seen from the thematic analysis, which showed that parents could either be highly supportive, or required much support themselves. The itinerant teachers were able to develop a collaborative partnership with those parents who were highly supportive regarding the development of language, vocabulary, and general knowledge among the students.

These highly collaborative partnerships with parents were rare but were welcomed by the itinerant teacher. Even though there were few such partnerships, there was evidence of the use of the family support model (Moeller et al., 2013), which has been widely recognised as being a necessary part of early intervention. Although there is evidence in other school systems of the continuation of this model for DHH students from early intervention into the early years of school, particularly with students with significant language delays (Colorado Department of Education, 2004), there was sufficient qualitative data in the current study (see Section 4.1) to suggest that it may be a useful area for further research. There were a few students in this study whose parents were able to easily and frequently engage in a partnership with the itinerant teachers. The interview descriptions of these instances of collaboration between itinerant teachers and parents demonstrated how language could be effectively facilitated using a family support model. It may be useful for future research to explore how significant elements of the family support model could be incorporated into itinerant teaching practice, particularly for students struggling to develop their first language.
5.3.6 The school environment.

It has long been known that mainstream classrooms are often noisy and reverberant (Crandell & Smaldino, 2000; Nelson, 2000), and frequently exceed recommendations for background noise and reverberation times (American National Standards Institute, 2002). According to the reports of the itinerant teachers in the current study, noisy classrooms were a constant feature of ACT schools, and not just in secondary schools. A number of primary classes were in open plan settings where DHH students had up to four separate classes visible and audible from their own classroom, with little sound attenuation. The itinerant teachers were uniformly very concerned ("horrified" according to Gladys) at these acoustic conditions and this is one of the more concerning findings from this study. The older students often asked for the itinerant teachers to take them to a quiet environment, where they could catch up on class work that they could not understand in the classroom, including speech and language work. Visual distractions were also difficult for much the same reasons, particularly in open-plan primary classrooms and also in secondary classes with students with disruptive behaviour.

The influence of noise was threefold: it limited the amount of audible, supportive interaction that could occur in the classroom when the itinerant teacher was not present, therefore increasing the language risk for the DHH students; it limited the development of speech, listening, or language skills from occurring within the classroom; and it required higher levels of concentration from students and teachers alike. It thus influenced the necessity and the location of speech and language intervention and necessitated higher levels of class support. Recent research on the way in which classroom noise during class discussion results in a reduction in the integrity, complexity, and effectiveness of interactions with hearing students (McKellin et al.,
2011), suggests that the acoustic conditions of classrooms will continue to require the provision of specialised direct teaching of language and/or other interventions to support communication access and language use in class.

The poor acoustic conditions, besides necessitating that direct speech, listening, and language instruction occur in quiet withdrawal conditions, also influenced teacher activities in other ways. The poor conditions provided an impetus to the consultation activities to modify the acoustics and teaching strategies, so that the DHH students could access the class instruction provided both by classroom teachers and by group discussions.

5.4 Recommendations for Research and Practice

The following recommendations are put forward for further research and practice in order to facilitate student outcomes through effective itinerant teacher strategies.

5.4.1 Replication.

In view of the limited geographic region of the study, replication in other educational jurisdictions would assist in establishing whether the direct teaching activities of itinerant teachers are similar teaching activities to those found in the ACT. Such a replication would need to use an expanded list of activities (i.e., as has been used in this study), and consider the relationship between teaching activities and the educational and support needs of students. Useful information could also be provided by examining the use of formal and informal assessments for language, speech, listening, and literacy. If, as is the case in the current study, the majority of the teaching activities are directed towards language teaching, then there would be implications for further research as well as clear impetus for teacher preparation programs to more directly prepare teachers for these tasks. Further research could be directed towards assessment
procedures and language-teaching strategies, with a view to conducting outcomes-based research on language teaching in mainstream schools.

5.4.2 Investigate language needs and language teaching elsewhere.

In view of: (a) the critical importance of language ability for access and success in mainstream schools (Dickinson et al., 2010) (b) the surprisingly high caseloads of itinerant teachers in other jurisdictions (Hyde & Power, 2004b); and (c) the evidence that many of the DHH students are likely to have significant language delays (Marschark & Spencer, 2010), it would be an invaluable service to DHH students in areas where the itinerant teachers have high caseload hours, to evaluate whether their language needs are being evaluated and adequately addressed.

5.4.3 Incorporate formal language programs.

The frequent provision of auditory skills teaching was partly due to the framework, assessment procedures, and instructional procedures from the ASP (Romanik, 1995). There was evidence that the itinerant teachers had internalised the structure of the program and were able to successfully use this structure with highly engaging materials, and were able to integrate listening goals in other teaching situations. The use of a similar structured program for the critical student need of language could achieve similar results, although developing or selecting such a program would be a complex task.

5.4.4 Investigate the explicit use of conversation.

Itinerant teachers valued conversation highly, and consistently used it to enhance communication development. Indeed some features of English make sense only within extended discourse settings such as: pronoun referencing, turn taking signals, and breakdown and repair strategies. Itinerant teachers already use conversation for a variety of purposes, such as monitoring progress, modelling pragmatic language, developing
social skills, and engaging their students. Early intervention teachers also use conversations, particularly within play, and they focus carefully on the quality of their interactions (DesJardin & Eisenberg, 2007). Itinerant teachers would benefit from similar explicit focus on their conversational interaction with a view to targeting language outcome more directly. Conversation can also be used for other useful student learning purposes, such as motivational conversations with adolescent students (Barnett et al., 2012). Explicit research on the use of conversation in the context of support for DHH students in mainstream education settings may reap major benefits for the better application of this commonly used activity.

5.4.5 Develop an expanded core curriculum for DHH students.

It is apparent from this study that itinerant teachers would benefit from clearer role definitions that recognised the unique and essential needs of DHH students. An expanded core curriculum, as used for students with a visual impairment, and as now being used for DHH students in some US states (Iowa Department of Education, 2010), could be developed to inform ILPs and assist with negotiations with class teachers and parents. It would also enable the development of a scope and sequence of instructional stages to support explicit teaching of communication skills in a professional and accountable manner.

5.4.6 Investigate continual progress monitoring of language.

Language teaching would benefit from more formal procedures to continually monitor language development. Such procedures would inform short-term goals and daily practice. One example is from P. M. Brown’s (2013) response to Moore’s (2008) call for a modification of the Response to Intervention framework, to allow for continual progress monitoring for DHH students. P. M. Brown (2013) has linked this to data-driven interventions—direct instruction—and has provided evidence of their use.
with literacy and other academic areas. She has included phonology in this list of student needs, but continual progress monitoring could also be applied to language instruction. Another potential is to use formal procedures for taking running records of language and conducting miscue-type analysis on these mini samples to develop the instructional activities for the next session. Both examples would provide more realistic ways to use formative assessments to guide the daily language habilitation activities that most itinerant teachers already clearly engage in. This higher level of accountability and planning could significantly enhance student language learning outcomes.

5.4.7 Develop realistic and accurate Individual Learning Plans.

ILPs can be a valuable tool for collaboration, and for engaging with the range of influences on itinerant teaching, especially if they explicitly address the specialised needs of DHH students, as expressed by an expanded core curriculum. Language development is the critical student need, and ILPs must therefore contain valid language assessments, explicit language goals, and strategies to provide high quality supportive interactions in optimal environments. The process for the development of ILPs could be reviewed and adjusted according to the RTI framework. Importantly, it is apparent from this investigation that the protocols for ILP meetings should respect the collaborative partnerships necessary to support student outcomes. The meetings should include all stakeholders when the plan is adopted, including the parents, student, school staff, and itinerant teachers.

5.4.8 Improve room acoustics.

In order for learning to occur effectively, it is apparent that the acoustic standards recommended for education must be adhered to for all students, or at the least, individual modifications made for every DHH student. An essential beginning for this process is to document the current acoustic conditions for each student. Given the
reliance on the ILP at the school level that was apparent in this study, this assessment should be recorded and addressed in the ILP as a basis for action at that level. Improvements in acoustic conditions, essential for DHH students, would also benefit hearing students who may have difficulties in the areas of concentration, behaviour, cognition, and language.

5.4.9 **Incorporate more family-centred practices into schools.**

In this study, parent collaboration was consistently acknowledged as essential for student language development, but with few exceptions the family-centred intervention model was missing, as indeed it generally is in any literature about school-based interventions with DHH students. There was evidence of innovative uses of email, text, and written messages to consult with parents, but the communications lacked a supportive structure. Considering that research strongly supports the primacy of high quality interactions with the caregivers as being of vital importance for language development (DesJardin & Eisenberg, 2007; Hirsh-Pasek & Burchinal, 2006), it is recommended that ways be investigated to continue more extensive parental engagement with DHH students, especially involving those with significant language delays.

5.5 **Limitations and Constraints**

This study had a number of general limitations, the first of which related to the sampling. It was confined to one Australian jurisdiction, which was a regional territory with low numbers of ESL students and generally high parental income and education levels. These demographic features are rare in Australia. The second limitation was due to the nature of the available data. The language results were from a smaller sample of this population, and the language results were from different tests and testers. There was also no direct data relating to the schools, mainstream teachers, or parents.
The third set of limitations related to the wide variation in the abilities of the students and the characteristics of the itinerant teachers. The inclusion of DHH students with other disabilities introduced high standard deviations in summary statistics, but provided rich detail that may be common to itinerant teachers in other locations. Similarly, the inclusion of unqualified and temporary teachers demonstrated that strong collegial influence can result in a convergence of opinions that can over-ride variations in teacher demographics. The caseload hours in the ACT were generally higher than in many other locations (see 2.4.6.4) but, as the analysis of the results indicates (see Section 4.5.1.2), there was little influence of total support hours on the type of support activities provided. In this context, it may be that some of the teaching activities were undertaken by other support staff. Further, it is recognised that, in other educational jurisdictions, itinerant teaching may be essentially consultative because of the limited support time for each student. Both of these possibilities limit the generalizability of these results. The current study did, however, indicate the importance of language support activities being provided within the range of available support activities, even if their incidence was low.

It is clear that with a study such as this, observations would assist in verifying the actual practices that the teachers reported. Subsequent studies would be well advised to include observations of teaching practices to validate the descriptions and measurements of the activities, and to administer consistent standardised tests for language, listening, speech, and literacy skills to provide reliable descriptions of student needs.

5.6 Summary

The study has demonstrated that itinerant teachers in the ACT were primarily communication teachers with a strong collaborative approach. The study provided
general support for itinerant teaching based on both the continuum of support model proposed by Antia et al. (2008) (with the addition of explicit direct teaching of spoken language), and the cascade of benefits model adapted from Summerfield and Marshall (1999) (with the addition of frequent consultations). Both models include the notion that a hierarchy of DHH student needs exists, and that itinerant teachers would be most effective if they addressed the language abilities that underlie literacy and other academic abilities. The “hierarchy of needs” concept implies that the core activities of itinerant teachers are to provide direct teaching of language and listening skills in conjunction with providing consultative activities that promote inclusion by facilitating improvements in the language and acoustic environments of schools. Conversation was found to be the core activity that integrated all the support activities and offered the possibility of strategic interventions if well used.

This study has provided extensive detail about the teaching strategies of itinerant teachers in the ACT and their core support activities. It has presented a role for itinerant teachers, which involves direct teaching to address documented student needs, combined and integrated with consultative support. It suggests that this combination is an effective way for itinerant teachers to facilitate DHH students accessing the curriculum, and has highlighted ways that ILPs can be used more effectively to promote student outcomes. Providing access to the curriculum through improved communication skills was the fundamental issue that challenged the itinerant teachers, which they sought to address in collaboration with the students, their parents, and the schools. The study has provided support for the importance of inclusion in enhancing learning outcomes for students with disabilities. The inclusion process involved adjustments by class teachers in consultation with specialist teachers, and, where necessary, the
provision of specialist explicit teaching guided by documented assessments, in conjunction with an effective ILP process.
References


REFERENCES


REFERENCES


Appendix A

Teacher Demographics Survey

**Teacher Information and Questions**

Please answer these preliminary background questions and then place this page in the blank individual teacher information envelope and seal it. Then place this envelope inside the larger teacher information envelope and write your name on the outside.

**PRELIMINARY QUESTIONS**

(Please circle or describe)

How many years have you worked as a teacher of Deaf or Hearing Impaired Children?

- 0-2
- 3-10
- 11-20
- more than 20

What are your specific qualifications for teaching Deaf/hearing impaired children?

- No formal qualifications
- Post Graduate Diploma
- Masters Degree
- Other…..

What is your teaching background?

- Early Childhood/Infants
- Primary
- Secondary

How many school students are currently on your caseload? ........
Appendix B

Teacher Activities Survey Page 1

1. Student grade........... Support hours per week........

2. What support assistance do you provide for this student?
   a) Please consider each of the activities listed below and provide an indication
      for a typical term, of the proportion of overall support time used on that activity
      across one typical week.
   b) For each activity, please indicate the number of instances of that activity in
      each time period e.g. 4 instances per week, 2 per term, 1 per year.

<table>
<thead>
<tr>
<th>Support Assistance</th>
<th>% of weekly support time, across a term</th>
<th>Frequency: Write a number in one column only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Literacy/English (following the class teacher’s program)</td>
<td></td>
<td>Week Month Term Year</td>
</tr>
<tr>
<td>Teaching Literacy (following a program designed by you for this student)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching other KLAs (following the class teacher’s program)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching other KLAs (following a program designed by you for this student)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching study/organization skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching academic subjects vocabulary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching general vocabulary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notetaking in mainstream lessons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching speech</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching Auditory skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching oral language with explicit targets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversing with the student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching specific aspects of sign(ed) language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision of sign interpreting (i.e., by you for this student)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching a social/behavioral program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consulting/communicating with parents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consulting/communicating with school staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assisting with assistive listening technology (e.g., assistance with hearing aids, cochlear implant, FM etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presenting to school staff (i.e., in-service education sessions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participating/organizing review/planning meetings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other activities (describe)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. What percentage of your support is one-to-one withdrawal?

4. Reasons for the choice of activities (to be answered on the back of the page).

Please turn over.
What factors influence the choice of support activities for this student?

The exact choice of activities will likely vary from student to student. In the space below, please comment briefly on the reasons behind the choice of the activities that you have described above. [Are there particular characteristics of this student (e.g., information that you hold regarding this student’s abilities) that influenced your decisions? Are there school-based, home-based or other factors that play a significant role in determining what you do in regard to intervention/support?]

List as many as are relevant but please note the most important influences in regard to the intervention/support that you provide.

Similarly please note below if there are any factors that serve to restrict the amount or type of intervention/support that would see as being most appropriate for this student.
Appendix C

Information and Consent Forms for Caregivers and Students over 18  p.1/6

C1: Information Statement for Caregivers

Supporting deaf and hard of hearing students in regular schools: Factors influencing support activities provided by itinerant hearing teachers.

You are invited to participate in the research project identified above which is being conducted by John Davison-Mowle as part of his PhD program from the School of Education at the University of Newcastle.

The research is part of John Davison-Mowle’s studies at the University of Newcastle, supervised by Professor Greg Leigh and Dr. Jill Duncan from the School of Education, RIDBC Renwick Centre and Associate Professor Michael Arthur-Kelly from the School of Education, University of Newcastle.

Why is the research being done?

The increasing availability of newborn hearing screening, early intervention, and cochlear implants is changing the nature of the population of students with hearing loss and suggests that there is a need to revise the methods of determining how these students are supported in schools. The purpose of the research is to examine factors associated with the choice of support activities.

Who can participate in the research?

We are seeking the participation of the caregivers of students within the ACT who are supported by Itinerant Hearing Support Teachers.

What choice do you have?

Participation in this research is entirely your choice and a decision not to participate will not result in any disadvantage in any dealings with the researchers or any teachers. You do not have to give a reason if you decide not to participate.

What would you be asked to do?

You will be asked to allow the researcher to access the files held by the Executive Teacher of the Itinerant Hearing Support Teachers about your child.

The researcher will copy details from these files of student’s age, school grade, hearing loss, language and other learning needs, and the strategies outlined in the ILPs. There will be no records made of any information that could in any way identify them, or of information outside the strict list approved by the University and the ACT department.

The details will be recorded under a number that no researcher will be able to match with names or other identifying information.
Appendix C

Information and Consent Forms for Caregivers and Students over 18

How much time will it take?
It will take approximately five minutes to read this information, and if you agree, to sign the consent form.

What are the risks and benefits of participating?
Your participation may assist teachers to provide effective Hearing Support. There are no anticipated risks.

How will your privacy be protected?
Digital data and consent forms will be held at RIDBC Renwick Centre for at least 5 years, where upon paper will be shredded and digital data deleted. All data will be anonymous and there is no anticipated need for identifiers. Consent forms will be held on paper physically separated from the data. Only researchers involved in the study will have access to this information.

How will the information collected be used?
The information will be used in a thesis to be submitted for Mr. J. Davison-Mowle’s PhD degree, and thereafter a summary report will be available for public dissemination.

What do you need to do to participate?
Please read this Information Statement and be sure you understand its contents before you consent to participate. If there is anything you do not understand, or you have questions, contact the researcher.
If you would like to participate, please read and complete the consent form attached.

Further information
If you would like further information please contact John Davison-Mowle by email: John.Davison-mowle@education.det.nsw.edu.au, or 0432216799(m) or Greg Leigh, at greg.leigh@newcastle.edu.au
Thank you for considering this invitation.
Appendix C

Information and Consent Forms for Caregivers and Students over 18

C2: Consent Form for Caregivers of Deaf and Hard of Hearing Students

Supporting deaf and hard of hearing students in regular schools: Factors influencing support activities provided by itinerant hearing teachers.

The research team: John Davison-Mowle (student researcher), Dr. Jill Duncan, Greg Leigh (Conjoint Professor and Chair, RIDBC Renwick Centre, Associate Professor Michael Arthur-Kelly.


- I agree to allow the researcher to have access to the records about my child that are held by the Executive Teacher of the Itinerant Hearing Support Service.

- I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

- I understand that no identifying information will be retained by the researcher, including personal names, teacher names or school names.

- I understand that no person will be able to identify my child in any way from this research.

- I have had the opportunity to have questions answered to my satisfaction.

Print Name:

Signature: Date:
C3: Information Statement for Older Students

Supporting deaf and hard of hearing students in regular schools: Factors influencing support activities provided by itinerant hearing teachers.


You are invited to participate in the research project identified above which is being conducted by John Davison-Mowle as part of his PhD program from the School of Education at the University of Newcastle.

The research is part of John Davison-Mowle’s studies at the University of Newcastle, supervised by Professor Greg Leigh and Dr. Jill Duncan from the School of Education, RIDBC Renwick Centre and Associate Professor Michael Arthur-Kelly from the School of Education, University of Newcastle.

Why is the research being done?

There have been a lot of changes in recent years for students with a hearing loss and these changes may have changed the way the Itinerant teachers work. The research will try and help the hearing support teachers to choose the best way to support their students.

Who can be part of the research?

All ACT students who are supported by Itinerant Hearing Support Teachers can be part of this research.

What choice do you have?

It is entirely your choice to be part of this research. None of your teachers will know your choice, and you do not have to give a reason for your choice.
Appendix C
Information and Consent Forms for Caregivers and Students over 18

What would you be asked to do?
You will be asked to allow the researcher to look at your student files in the main office of the hearing support teachers.

The researcher will copy information from these files about your learning needs and hearing support, but will not copy any personal information that could in any way identify you.

How much time will it take?
It will take approximately five minutes to read this information, and if you agree, to sign the consent form.

What are the risks and benefits of participating?
Being part of the research may assist teachers to provide effective Hearing Support. There are no anticipated risks.

How will your privacy be protected?
All the information collected will be anonymous and will be held securely by the university for at least 5 years and then it will be destroyed. Only researchers involved in the study will have access to this anonymous information.

How will the information collected be used?
The information will be used in a thesis to be submitted for Mr. J. Davison-Mowle’s PhD degree, and after that a summary report will be available for public dissemination.

What do you need to do to participate?
Please read this Information Statement and be sure you understand its contents before you consent to participate. If there is anything you do not understand, or you have questions, contact the researcher. If you would like to participate, please read and complete the consent form attached.

Further information
If you would like further information please contact John Davison-Mowle by email: John.Davison-mowle@education.det.nsw.edu.au, or 0432216799(m) or Greg Leigh, at gregleigh@newcastle.edu.au Thank you for considering this invitation.
Appendix C

Information and Consent Forms for Caregivers and Students over 18

C4: Consent Form for Deaf and Hard of Hearing Students

Supporting deaf and hard of hearing students in regular schools: Factors influencing support activities provided by itinerant hearing teachers.

The research team: John Davison-Mowle (student researcher), Dr. Jill Duncan, Greg Leigh (Conjoint Professor and Chair, RIDBC Renwick Centre, Associate Professor Michael Arthur-Kelly.


I agree to allow my student records to be accessed by the researcher. I understand that the project will be conducted as described in the Information Statement, a copy of which I have kept. I understand that no identifying information will be retained by the researcher, including personal names, teacher names or school names. I understand that no person will be able to identify me in any way from this research. I have had the opportunity to have questions answered to my satisfaction.

Print:

Name:

Signature

Date:
Appendix D

Student Enrolment Patterns in the ACT

Geography

The Australian Capital Territory (ACT) is the smallest of the six states and two territories that comprise Australia. It covers approximately 2,400 square kilometres in the south-east of Australia where over 99% of the population live in a purpose built urban environment, the city of Canberra. It was selected as the site for the research because it offered a region that is discrete both geographically and educationally. The government of the ACT is separate from the rest of Australia.

Population

In 2012 the ACT population was 376,500 (ABS, 2012). The proportion of people with a higher education qualification was the highest in Australia and average household income was also the highest for any large city in Australia.

Educational Jurisdictions

Schools within Australia can generally be categorised as belonging to one of three systems: government, independent, and Catholic. The government school system in each state and territory are independent of each other and are administered and almost entirely financed by the relevant state or territory. Each public school is usually equally resourced and centrally managed, especially with regard to the provision of special education resources.

The independent schools, or private schools, rely on school fees and donations to augment substantial government-provided funding (subsidies). They are able to set their own policies on many issues, including enrolment and access to special education support, but must follow the relevant state or territory curriculum requirements as well as state and national legislations under which they operate. The majority of the
independent schools are associated with major churches or other religious organisations. Some independent schools are Catholic schools that are managed independently of the Catholic school system.

Catholic systemic schools are those Catholic schools that are managed under the auspices of the local Catholic diocese. They also rely on school fees as well as substantial public funding (subsidies) with the relevant diocesan system administration setting its own policies on enrolment and provision of special education services.

**Student Enrolment Patterns**

School student refers to the traditional 13 years of schooling from kindergarten through year 1 to year 12 and also to attendance at pre-school. Pre-school is a year of partial attendance of 12 hours a week at a play based school prior to kindergarten. In 2012, there were 67,536 students enrolled in schools within the ACT (ACT Government, 2013). This number included students who travelled from NSW to attend ACT schools. The enrolment pattern according to the three school systems is shown in Figure 1.

![Bar Chart](image)

*Figure 1.* Percentage enrolment in each school system.

The public schools are mandated to provide a suitable educational environment for all students. As illustrated in Figure 1, 77% of all the students with special needs
attend public schools, even though they enrol only 59% of the total student population. Calculated another way, 4.7% of the students at public schools have special needs, compared with 1.8% in the independent schools and 2.3% in the Catholic systemic schools.

All DHH students supported by itinerant teachers in the ACT in any school system were invited to participate in the research. No information was sought about their socio economic status or the general resourcing of the mainstream school because the relatively low numbers in this discrete setting would have compromised privacy concerns.
Appendix E

Codebook for Recording Information from Student Files

<table>
<thead>
<tr>
<th>Category</th>
<th>Format of data</th>
<th>Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant code</td>
<td>Numbers: <strong>1-50</strong></td>
<td>Executive teacher will have list of codes and student names for use if the student is selected for case study</td>
<td>To enable executive teacher to match student details with support activities questionnaires</td>
</tr>
<tr>
<td><strong>A: Demographic influences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Birth year and month</td>
<td><strong>mm/yyy</strong></td>
<td>Date of birth will not be recorded to safeguard privacy</td>
<td>Age in years and months to be calculated</td>
</tr>
<tr>
<td>2. Gender</td>
<td><strong>M / F</strong></td>
<td></td>
<td>Literature suggests possible factor</td>
</tr>
<tr>
<td><strong>B: School influences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Hours of IHST support per week</td>
<td><strong>Number (0-6)</strong></td>
<td>Zero hours means that the student is on a monitor program with no regular support. 6 is the maximum</td>
<td>This category will be used to select possible case studies</td>
</tr>
<tr>
<td>4. Grade level at school</td>
<td><strong>P</strong> (pre-school), <strong>K</strong> Kindergarten, <strong>1-12</strong> Grade level</td>
<td></td>
<td>Literature suggests possible factor</td>
</tr>
<tr>
<td>5. Type of school</td>
<td><strong>P</strong> Primary, <strong>S</strong> Secondary (7-12), <strong>C</strong> College (yrs. 11 &amp; 12), <strong>U</strong> Unit, <strong>M</strong> Multi-grade level (K-12)</td>
<td>Unit refers to a special education class in a regular school, such as a class for students with autism</td>
<td>Literature suggests possible difference in expectations from primary and secondary schools</td>
</tr>
</tbody>
</table>

6.
### Appendix E

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<th>Format of data</th>
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<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Transition support</td>
<td><strong>N</strong> None&lt;br&gt;<strong>S</strong> Some mention&lt;br&gt;<strong>E</strong> Explicit mention in 2 or more documents</td>
<td>ILPs or reports may indicate need for a transition program by IHST (e.g., beginning K, yr. 7, transitioning to post-school options)</td>
<td>Possible systemic factor (i.e. system requires IHST to engage in transition support activities).</td>
</tr>
<tr>
<td>8. Hearing loss Left</td>
<td><strong>0-120</strong> Decibels or CI ( Implanted)</td>
<td>Hearing loss at 4 frequencies: 500Hz, 1kHz, 2kHz, 4kHz</td>
<td>Literature suggests possible factor</td>
</tr>
<tr>
<td>9. Hearing loss Right</td>
<td><strong>0-120</strong> Decibels CI ( Implanted)</td>
<td>Hearing loss at 4 frequencies: 500Hz, 1kHz, 2kHz, and 4kHz</td>
<td>Literature suggests possible factor</td>
</tr>
<tr>
<td>10. Type of Hearing loss</td>
<td><strong>SN</strong> Sensory neural&lt;br&gt;<strong>PC</strong> Permanent conductive&lt;br&gt;<strong>CC</strong> Chronic conductive</td>
<td></td>
<td>Chronic conductive may require more adult management</td>
</tr>
<tr>
<td>11. Assistive listening devices</td>
<td><strong>HAL</strong> Hearing Aids (Left or Right)&lt;br&gt;<strong>CIR</strong> Cochlear implant right&lt;br&gt;<strong>FM</strong> FM&lt;br&gt;<strong>BC</strong> Bone conductor, S Soundfield system</td>
<td>Device should be coded for each ear, using <strong>L</strong> or <strong>R</strong></td>
<td>Some devices may require more assistance that others</td>
</tr>
<tr>
<td>12. Assistance required with assistive device</td>
<td><strong>N</strong> None mentioned,&lt;br&gt;<strong>S</strong> Some mention&lt;br&gt;<strong>E</strong> Explicit mention in 2 or more documents</td>
<td>Reports may indicate that the assistive listening devices are well used, or that IHST support is necessary</td>
<td>Some students require continual support to ensure that the assistive listening device is working and used</td>
</tr>
</tbody>
</table>
## Appendix E

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<tr>
<th>Category</th>
<th>Format of data</th>
<th>Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Room acoustics assistance</td>
<td>C Completed room acoustics test</td>
<td></td>
<td>This may be a component of IHST support requested by system, school, or parent and delivered by IHST</td>
</tr>
<tr>
<td></td>
<td>R Requested room acoustics test</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N No mention</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C Consultation with staff either requested or planned</td>
<td></td>
<td></td>
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</tbody>
</table>

### D: Management of communication needs

<table>
<thead>
<tr>
<th>Category</th>
<th>Format of data</th>
<th>Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Language mode</td>
<td>O Oral</td>
<td>Some students use signing for most (&gt;75%) of their receptive and expressive communication, some use it for less, 75%-10% (Sign Assisted), others almost never</td>
<td>Assistance with signing students may be very different from oral students</td>
</tr>
<tr>
<td></td>
<td>S Uses signing exclusively</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SA Sign assisted</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Format of data</th>
<th>Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Availability of Language ability data</td>
<td>N None available</td>
<td></td>
<td>Availability of language test results may influence the choice of support activities.</td>
</tr>
<tr>
<td></td>
<td>A Data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P Pending, I Incomplete, U Unreliable</td>
<td></td>
<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Category</th>
<th>Format of data</th>
<th>Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Language examiner (i.e., for most recent test)</td>
<td>IC Current IHST</td>
<td>What category of person was the test examiner?</td>
<td>Relates to the validity of the test, as well as to whether the current IHST is quite familiar with the test details</td>
</tr>
<tr>
<td></td>
<td>IP past/other IHST</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST Speech Therapist,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P Psychologist,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>O other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Format of data</th>
<th>Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Date of language test</td>
<td>dd/mm/yyyy</td>
<td>How current is the language result?</td>
<td>Relates to the validity of the test</td>
</tr>
</tbody>
</table>
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</tr>
</thead>
<tbody>
<tr>
<td>18. Name of test or procedure</td>
<td>ST Standardised test Name of ST LS Calculated from language sample E Estimate</td>
<td>If standardised test is used, the name of the test is to be recorded here, as well as the code, e.g. ST CASL</td>
<td>Name allows verification of validity and reliability of test, as well as reporting procedures</td>
</tr>
<tr>
<td>19. Language ability data</td>
<td>Numbers plus code</td>
<td>Data may be either receptive language, expressive language or total language scores. Result numbers may refer to Percentiles, Standard Scores, Language Age, or a language category word may be</td>
<td>Standard scores and percentiles will allow comparison between different standardised tests.</td>
</tr>
<tr>
<td></td>
<td>E Expressive</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R Receptive</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P Percentile</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SS Standard score</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LA Language age</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C Category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Language Subtests</td>
<td>Each subtest needs to be listed, with percentile or standard score</td>
<td>Results may be recorded only as subtests for some tests, e.g. CASL</td>
<td></td>
</tr>
<tr>
<td>21. Listening ability</td>
<td>N No mention</td>
<td>A traditional role of a teacher of the deaf</td>
<td>If data available indicates influence of student need on IHST activities</td>
</tr>
<tr>
<td></td>
<td>M Specific mention of a mild need for listening skill development</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MS Specific mention of moderate to severe need.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Additional speech needs</td>
<td>N No mention</td>
<td>A traditional role of a teacher of the deaf</td>
<td>If data available indicates influence of student need on IHST activities</td>
</tr>
<tr>
<td></td>
<td>M Specific mention or a mild need</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MS specific mention or a moderate to severe need</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**E: Other student non-academic needs**
## Appendix E

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</tr>
</thead>
<tbody>
<tr>
<td>23. Other diagnosed disabilities</td>
<td>CM, CO, CS</td>
<td>Confirmed by professional diagnosis and reports. If other, the name needs to be recorded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive (Mild, moderate, severe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AS Autism spectrum disorder</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M Mental health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AD Attention disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>O Other (Name)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Other student needs requiring IHST support</td>
<td>N None</td>
<td>Other student needs that may not have documentary diagnostic support, but are referred to in reports</td>
<td>There may be other student influences not covered by the current categories</td>
</tr>
<tr>
<td></td>
<td>S Some mention</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>E Explicit mention in 2 or more documents.</td>
<td>(Description recorded of type of support or student need that is requested)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F: Student academic needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Academic ability from school reports</td>
<td>N No valid reports available</td>
<td>If S, then there is more specific data available for literacy and/or numeracy, and this will be recorded in whatever form it is available</td>
<td>Consistent research evidence that IHST spend a significant proportion of time tutoring</td>
</tr>
<tr>
<td></td>
<td>B Below grade level,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G Grade level,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A Above grade level</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S Specific data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Literacy ability</td>
<td>N No valid literacy data available,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B Below grade level,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G Grade level,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A Above grade level</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix E

### Codebook for Recording Information from Student Files

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<thead>
<tr>
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<th>Comment</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>G: Individual Learning Plans (ILPs)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Availability of ILPs</td>
<td>A Available</td>
<td>IHST activities may be strongly influenced by ILP process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C Current</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I Input from IHST evident,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P Preparation meeting attended by IHST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. ILPS – Description of specific academic needs that require IHST support</td>
<td>Contains following terms: SS Study Skills, P Phonics, L Literacy, N Numeracy, R Reading, W Writing, O Other (List)</td>
<td>O Other code requires written description</td>
<td>IHST activities may be influenced by academic support model for teacher of the deaf roles</td>
</tr>
<tr>
<td>29. ILPS contain description of traditional IHST roles</td>
<td>Contains following terms: LS Listening skills, ST Speech therapy, LT Language therapy, AA Accommodations and adjustments, O Other</td>
<td></td>
<td>IHST activities may be influenced by ILP endorsement of traditional teacher of the deaf roles</td>
</tr>
<tr>
<td>30. ILPs contain expectations that IHSTs contribute to support for non-hearing disabilities</td>
<td>N None, S Some mention E Explicit mention in 2 or more areas.</td>
<td>If S or E, then disability will be recorded</td>
<td>Some IHST support may be to provide assistance in supporting the student because of other disabilities, unrelated to the hearing</td>
</tr>
</tbody>
</table>
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<th>Comment</th>
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</tr>
</thead>
<tbody>
<tr>
<td>31. Parent / caregiver requests</td>
<td>N None</td>
<td>If S, then brief description of what parent/caregiver requested</td>
<td>Documentary evidence of parent/caregiver influence with IHST support</td>
</tr>
<tr>
<td></td>
<td>I Parents/caregivers had input to the ILP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>S Specific requests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. ILP headings</td>
<td>List any other headings not mentioned above</td>
<td></td>
<td>Allows for other possible influences</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H: ACT DET systemic requirements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. ILPS contain terminology from inclusive education and ACT strategic plans</td>
<td>Contains following terms: CB Capacity building I Inclusive education/ inclusion O Other</td>
<td>O listing requires recording the words used</td>
<td>Systemic influences may be evident from the terminology used in the ILPs</td>
</tr>
<tr>
<td>34. Other</td>
<td>Brief notes of any other possible factor not covered by the given categories</td>
<td>No identifying details to be recorded</td>
<td>There may be other influences not currently evident</td>
</tr>
<tr>
<td>35. ETD codes</td>
<td>Record as listed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Letters in bold were used to code the data indicated. IHST refers to Itinerant Hearing Support Teacher.*
Appendix F

Schedule for Individual Interviews

Preparations for the interview:

1. Extra copies of the Information Page and the signed Consent Form will be available.

2. A list of the support activities will be available, as used in the IHST Questionnaires, with the inclusion of any additional activities that arose from completed questionnaires.

3. The Student Activities Questionnaires completed by the IHST will also be available.

4. Time Frame: (Allow one hour in total)
   a. Introduction/Briefing: 5 minutes. Discuss consent process, time frame, and physical factors (availability of room, chairs etc.).
   b. Interview Taping: 45 minutes with an additional Last Thoughts question extending 5 minutes.
   c. Debriefing after interview: 5 minutes (unrecorded).

Introduction/Briefing: (unrecorded)

1. Thanks for agreeing to the interview. I have a copy of the information page that you were sent. Is there anything in these documents that you wished to have clarified?

2. I also have your signed consent form. Do you have any questions about the consent process?

3. I would like to clarify our time for this interview. Once we begin, we can talk for approximately 45 minutes and then I will ask you for your last thoughts. After that I will turn off the recorder, and we will take another 5 minutes to
debrief. This will mean that we will finish in about one hour. Is that time available and acceptable with you?

4. I will now start the recorder.

Initial questions (Recorded)

1. I have a list support activities that itinerants may use with their students and your completed questionnaires about your students. You may like to look at it to remind yourself of the sort of activities you use. I am interested in how you choose which activities to use with your students and what influences your decision.

2. I would like you to reflect on your current school-age students, and think about one student who receives more than four hours support.

3. Could you think back to when you first started to work with this student? Could you describe the process of determining which teaching activities you would use with him/her?

4. I am particularly interested in what information you used to make your choices, and what influenced your decisions. In other words, can you explain the process that led you to determining exactly what you do to support this student?

5. Now could you think about another student? How does your work with this student differ from the first? If the activities are different, why are they different? What determined your choice of a different mix of activities?”

This process will be repeated until no new influences are mentioned.
Appendix F

Schedule for Individual Interviews, continued.

Follow up questions when particular influences are mentioned

1) **Language ability**
   a) “You mentioned language: What did you use to assess the student’s language ability? Is this what you normally use?
   b) How did the language ability of the student influence your choice of activities?
   c) If another student had a different level of language ability, what sort of activities would you choose for that student?
   d) How do you see your role in assisting this aspect of the student’s development?”

2) **If there is no mention of language ability**
   a) “You mentioned the hearing loss, other disability etc. of the student. What about language ability? To what extent do you consider it with your students?
   b) How does it impact on your choice of activities?”

3) **Other people**
   a) “You mentioned that (a particular person, type of person, i.e., parent, class teacher, AP) influenced your choice of activities. Could you describe the extent and nature of this influence in more detail?
   b) How does it differ from student to student?

4) **Policy**
   a) You mentioned some policy or guidelines, what policy is that and what influence does it have on your choice of activities?

5) **Physical/time**
   a) You mentioned that a particular situation (i.e., room availability, length of sessions, time of day etc.) influenced your choice of activities. Could you describe this in more detail? What control did you have of these influences?
   b) How does it differ from student to student?”

6) **Prioritising the factors**
   a) “You have mentioned a number of influences (hearing …….language…..), that you take into account, could you now describe how you prioritise these influences, which are the most significant when you choose your activities.
   b) In what way does this process of choosing the activities differ from student to student?”

7) **To summarize with this student**
   a) “What needs are you aiming to address for this student by your support, and which activities enable you to achieve this goal?
   b) How does your support differ from a general support teacher?
   c) Is there an anecdote that illustrates why a particular activity is used with this student?”

8) **Last Thoughts Question**
   “Do you have any last thoughts about what determines the way you spend your time with your students?”
Appendix F

Schedule for Individual Interviews, continued.

General follow up questions

1. “Can you tell me more about that?
2. Can you tell me how it works in as much detail as you need?
3. What other influences would you take into consideration?
4. How confident are you in your ability to work with the student in this way (speech work, language work ….)?
5. Can you tell me about situations where you would like to work with the student in a certain way, but other influences prevent this? How common is this?
6. Can you outline what you are you try to do with your time with the student and why?
7. How do you see your role when you spend time with the student?”

Questions to assist with Analysis

1. “Is it correct to say that you hold …… to be the most important information you need, followed by… and then…?]
2. What proportion of your students does this process hold for?
3. What kind of student does it not hold for?
4. Can I summarise how I see your role with students as being ….. ?
5. Is it correct to say that you are able to make most/all/some of the decisions about choice of activities yourself?
6. Is it correct to say that when you know that the student has delayed language, you generally spend some/most/half of the time assisting the language of this student?”

Debriefing (Unrecorded)

“Thanks for your time and your thoughts. They will be carefully transcribed and a copy will be provided for you to check if you wish. It will then be used together with other interviews to help understand how IHST currently work. It has been a privilege to discuss these issues with you and I thank you for your participation and trust.

These interviews will be analysed within the next year, and thereafter the results of this analysis will be published and made available on the RIDBC website.”
Appendix G

Interview Schedule for the Focus Groups

Participants:

All IHSTs will be invited to participate. Groups of 4-6 will be sought. If there are sufficient participants for two groups, random selection will be used to assign participants to the two groups.

Location:

Staff room of the IHST service, Mariybynong Centre, Albergia St. Kaleen.

Preparations for the interview:

5. Extra copies of the Information page and the signed Consent Form will be available.

6. Time Frame: (Allow one hour and a half in total)
   a. Introduction/Briefing: 5 minutes. Discuss consent process, time frame, and physical influences (availability of room, chairs etc.).
   b. Interview Taping: 1hr with an additional Last Thoughts question extending 5 minutes.
   c. Debriefing after interview: 5 minutes (unrecorded).

Introduction/Briefing: (unrecorded)

1. Thanks for agreeing to participate in this focus group. I have a copy of the information pages that you were sent. Is there anything in these documents that you wished to have clarified?

2. I also have your signed consent forms. Are there any questions about the consent process?

3. I would like to clarify our time for this interview. Once we begin, we can talk for approximately one hour and then I will ask you for your last thoughts. After that I will
turn off the recorder, and we will take another 5 minutes to debrief. This will mean that we will finish in about one hour and a quarter. Is that time available and acceptable with all of you?

4. I will now start the recorder.”

**Initial briefing (Recorded)**

This is the last stage in this research project and I thank you for your earlier assistance and for being part of this group. I now wish to briefly outline some of the themes that have emerged from the data, and some of our questions that still remain. I will then open the discussion and you are free to comment on our findings and provide some answers to our questions. We hope that the comments of your colleagues may spark some interesting thoughts that could be shared with us.

**Questions:**

1. It seems that the following influences, in order of importance, are deemed by most of you as having the most significant influence on the choice of your support activities.
   a. the needs of each student for listening, speech, and language work
   b. the influence of the class teacher and class program,
   c. the possibly noisy and confusing classroom,
   d. the individual nature of each situation
   e. the influence of the student’s interests and personality.

2. Could you comment on whether this accords with your experience and which ones are most important to you?

3. Some teachers were concerned about those students where it was evident to them that a large gap exists between what the student can do and what their class peers are able and expected to do. Can you tell me what you can realistically do
in this situation, and in particular, what determines your activities with these students?

4. Is there a difference between what the student needs and your actual activities?

   If this is the case, what is the reason for this?

5. **Last Thoughts:** What would you say is the most important thing that you would like this research to have found out about how you actually work with your students?

**Debriefing (Unrecorded)**

   “Thanks for your time and your thoughts. They will be carefully transcribed and a copy will be provided for you to check if you wish. It will then be used together with other interviews to help understand how IHST currently work. It has been a privilege to discuss these issues with you and I thank you for your participation and trust.

   These interviews will be analysed within the next year, and thereafter published and made available on the RIDBC website.”
Appendix H

Human Research Ethics Committee Approval

HUMAN RESEARCH ETHICS COMMITTEE

Notification of Expedited Approval

To Chief Investigator or Project Supervisor: Conjoint Professor Gregory Leigh
Cc Co-investigators / Research Students: Associate Professor Michael Arthur-Kelly
Ms Jill Duncan, Mr John Davison-Mowle

Re Protocol: Supporting Deaf and Hard of Hearing Students in Regular Schools:
Influences on Support Activities Provided by Itinerant Hearing Support Teachers

Date: 03-May-2012
Reference No: H-2012-0002
Date of Initial Approval: 01-May-2012

Thank you for your Response to Conditional Approval submission to the Human Research Ethics Committee (HREC) seeking approval in relation to the above protocol.

Your submission was considered under Expedited review by the Chair/Deputy Chair. I am pleased to advise that the decision on your submission is Approved effective 01-May-2012.

In approving this protocol, the Human Research Ethics Committee (HREC) is of the opinion that the project complies with the provisions contained in the National Statement on Ethical Conduct in Human Research, 2007, and the requirements within this University relating to human research.

Approval will remain valid subject to the submission, and satisfactory assessment, of annual progress reports. If the approval of an External HREC has been "noted" the approval period is as determined by that HREC.

The full Committee will be asked to ratify this decision at its next scheduled meeting. A formal Certificate of Approval will be available upon request. Your approval number is H-2012-0002.

If the research requires the use of an Information Statement, ensure this number is inserted at the relevant point in the Complaints paragraph prior to distribution to potential participants.

You may then proceed with the research.
Appendix I

Research Approval from the Education and Training Directorate of the ACT

Mr John Davison-Mowie
RIDBC Renwick Centre
Private Bag 29
PARRAMATTA NSW 2124

Dear Mr Davison-Mowie

Approval of research proposal

Thank you for your application to conduct the proposed research titled Supporting deaf and hard of hearing students in regular schools: factors influencing support activities provided by itinerant hearing support teachers. I am pleased to inform you that the Education and Training Directorate has approved your research.

Please note the following conditions regarding your proposed research project:
• research in the school(s) must be concluded by 30 June 2013
• provide a current certificate of public liability insurance on or before 31 October 2012 to continue research in schools beyond 31 October 2012: the expiry date of current insurance
• any changes in the methodology, scope and timeframe of the project requires the approval from the Directorate
• provide names of schools that participated in the research project at the completion of research/data collection in schools
• within one month of completing your research, you are required to forward electronic and hard copies of your research (paper/report/thesis) electronically to det.research@act.gov.au and by mail to the following address:

Manager
Reporting and Research
Planning and Performance Branch
Education and Training Directorate
ACT Government
GPO Box 158
CANBERRA ACT 2601

• research reports received as per the preceding condition are placed in an online library accessible internally to all Directorate staff in order to inform policy and program development and evaluation through research in public schools.
Appendix J

Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

Supporting deaf and hard of hearing students in regular schools: Factors influencing support activities provided by itinerant hearing teachers.

J1: Questionnaires for IHSTs

You are invited to participate in the research project identified above which is being conducted by John Davison-Mowle as part of his PhD program from the School of Education at the University of Newcastle.

The research is part of John Davison-Mowle’s studies at the University of Newcastle, supervised by Professor Greg Leigh and Dr. Jill Duncan from the School of Education, RIDBC Renwick Centre and Associate Professor Michael Arthur-Kelly from the School of Education, University of Newcastle.

Why is the research being done?

The increasing availability of newborn hearing screening, early intervention and cochlear implants is changing the nature of the population of students with hearing loss and suggests that there is a need to revise the methods of determining how these students are supported in schools. The purpose of the research is to examine factors associated with the choice of support activities.

Who can participate in the research?

We are seeking the participation of all Itinerant Hearing Support Teachers working within the Education and Training Directorate in the ACT.

What choice do you have?

Participation in this research is entirely your choice and a decision not to participate will not result in any disadvantage in any dealings with the researchers.
If you do decide to participate you may withdraw from the project at any time without giving a reason.

What would you be asked to do?

You are asked to complete anonymous questionnaires to be provided prior to the next staff meeting. They can be completed and sealed in envelopes at the staff meeting.
Appendix J

Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

Appendix J1: continued.

The questionnaire will ask about current students on your caseload as well as some background teacher information. No information will be requested that could in any way be used by the researchers to identify either the teacher completing the questionnaire or the students.

How much time will it take?

The Teacher Information and Questions page should take about 2 minutes and the Support Activities Questionnaire about 5-10 minutes per student; about 30 minutes in total.

What are the risks and benefits of participating?

Completing these questionnaires may assist in self-reflection as an ISH and will contribute to an understanding of the changing role of itinerant teachers. There are no anticipated risks involved.

How will your privacy be protected?

All results will be aggregated so that it is impossible to identify teachers, students, locations or schools. Digital data, questionnaires, and consent forms will be held at RIDBC Renwick Centre for at least 5 years, where upon paper will be shredded and digital data deleted. All data will be anonymous and there is no anticipated need for identifiers. Only researchers involved in the study will have access to this information.

How will the information collected be used?

The information will be used in a thesis to be submitted for Mr. J. Davison-Mowle’s PhD degree, and thereafter a summary report will be available for public dissemination.

What do you need to do to participate?

Please read this Information Statement and be sure you understand its contents before you consent to participate. If there is anything you do not understand, or you have questions, contact the researcher.

If you would like to participate, please complete the questionnaires. Your completion of the anonymous questionnaires will be taken as implied consent.
Appendix J
Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

Appendix J1: continued.

How to begin

Start with the one page Teacher Information and Questions page. Complete this and seal it in the envelope provided. Then place this sealed envelope in the next envelope and write your name on the outside.

Then fill in one Support Activities Questionnaire for each school student on your caseload and seal these completed questionnaires in a separate blank envelope for each student. Place these in another envelope provide and write the student name on the outside of each envelope.

The Executive Teacher will open these outer envelopes and number the questionnaires and discard the names.

Further information
If you would like further information please contact John Davison-Mowle by email: John.Davison-mowle@education.det.nsw.edu.au, or 0432216799(m) or Greg Leigh, at greg.leigh@newcastle.edu.au Thank you for considering this invitation

Greg Leigh Project Supervisor

John Davison-Mowle Student Researcher

Complaints about this research

This project has been approved by the University’s Human Research Ethics Committee,

Approval No. H- 2010-1036
Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.
Appendix J

Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

J2: Information Statement for Individual and Focus Group Interviews

Supporting deaf and hard of hearing students in regular schools: Factors influencing support activities provided by itinerant hearing teachers.


You are invited to participate in the research project identified above which is being conducted by John Davison-Mowle as part of his PhD program from the School of Education at the University of Newcastle.

The research is part of John Davison-Mowle’s studies at the University of Newcastle, supervised by Professor Greg Leigh and Dr. Jill Duncan from the School of Education, RIDBC Renwick Centre and Associate Professor Michael Arthur-Kelly from the School of Education, University of Newcastle.

Why is the research being done?

The increasing availability of newborn hearing screening, early intervention, and cochlear implants is changing the nature of the population of students with hearing loss and suggests that there is a need to revise the methods of determining how these students are supported in schools. The purpose of the research is to examine factors associated with the choice of support activities.

Who can participate in the research?

- Teachers who are working for the ACT Education and Training Directorate as Itinerant Hearing Support Teachers

What choice do you have?

Participation in this research is entirely your choice. Only those people who give their informed consent will be included in the project. Whether or not you decide to participate, your decision will not disadvantage you.

If you do decide to participate, you may refuse to answer any questions and you may withdraw from the project at any time without giving a reason and have the option of withdrawing any data, which identifies you.
Appendix J

Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

Appendix J2: Information Statement for Interviews, continued.

What would you be asked to do?

Individual Interviews:
You will be asked to respond to the interviewer’s questions. The interviews will be about issues associated with the research question.

Focus Group Interviews:
You will be asked to participate in a small focus group (4-6 members) with the researcher to consider questions and issues raised by the earlier surveys and interviews.

All interviews will be audio recorded to facilitate analysis. After transcription of the interview, a written copy of the interview can be provided to you. Any corrections or deletions you make will be accepted by the researcher before further analysis.

How much time will it take?

The individual interview will take a maximum of one hour, and the focus group a maximum of 1.15 hours, a few months after the individual interview.

What are the risks and benefits of participating?

Participating in the interviews may assist in self-reflection as an IHST.

How will your privacy be protected?

After transcription and analysis of the interviews, the tapes and transcriptions will be held at RIDBC Renwick Centre for at least 5 years, whereupon paper will be shredded and digital data deleted. The results will be aggregated so that it is impossible to identify teachers, students, locations, or schools. All data will be anonymous and there is no anticipated need for identifiers. Only researchers involved in the study will have access to this information.

How will the information collected be used?

The information will be used in a thesis to be submitted for Mr. J. Davison-Mowle’s PhD degree, and thereafter a summary report will be available for public dissemination.

What do you need to do to participate?

Please read this Information Statement and be sure you understand its contents before you consent to participate. If there is anything you do not understand, or you have questions, contact the researcher.

You will be asked to:

• Participate in an individual interview with the researcher about the topic as described in the Information Statement
Appendix J
Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

Appendix J2: Information for Interviews, continued.

- Allow the interviewer to audiotape the interview
- Allow the researcher, or his designated assistant, to transcribe the interview.
- You will be asked to indicate on the consent form your choices as follows
  - Having a written transcription of the interview presented to you for reviewing.
  - Being quoted in the final report, and if so being identified by name, by pseudonym or anonymously.

Individual participants will thus not be identifiable in any reports on the project, without explicit, written permission as outlined in the consent form. You will be able to review the audio recording and written transcriptions to edit or erase your contributions if you so wish. All participants in interviews will receive a written summary of the interviews.

If you would like to participate, please read and complete the consent form attached and post it in the reply paid envelope attached. I will then contact you to arrange a time convenient to you for the interview.

Further information
If you would like further information please contact John Davison-Mowle by email: John.Davison-mowle@education.det.nsw.edu.au, or 0432216799(m) or Greg Leigh, at greg.leigh@newcastle.edu.au

Thank you for considering this invitation.

Greg Leigh: Project Supervisor
John Davison-Mowle: Student Researcher

Complaints about this research
This project has been approved by the University’s Human Research Ethics Committee, Approval No. H-2010-1036
Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au
Appendix J

Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

J3: Consent Form for Individual Interviews


I agree to participate in an individual interview as part of the above research project and give my consent freely. I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained. I understand I can withdraw from the project at any time and do not have to give any reason for withdrawing. I understand that I stop the interview at any time and can review and delete any information recorded in the interview.

I consent to

- Participating in an individual interview with the researcher about the topic as described in the Information Statement Yes / No
- Allowing the interviewer to audiotape the interview Yes / No
- Allowing the researcher, or his designated assistant, to transcribe the interview. Yes / No

I further consent to the following choices

- Having a written transcription of the interview presented to me for reviewing. Yes / No

- Being quoted in the final report Yes / No
  - Quoted by name Yes / No
  - Quoted by pseudonym Yes / No
  - Quoted anonymously Yes / No

I understand that my personal information will remain confidential to the researchers.

I have had the opportunity to have questions answered to my satisfaction.

Print Name:
Signature: Date:

Contact Details (to arrange interviews): Phone
Appendix J

Information and Consent Forms for the Itinerant Teachers for Surveys, Individual Interviews and Focus Groups

J4: Consent Form for Focus Group Interviews


I agree to participate in a Focus Group interview as part of the above research project and give my consent freely. I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained. I understand I can withdraw from the project at any time and do not have to give any reason for withdrawing. I understand that I withdraw from the group at any time and can review and delete any information recorded in the interview.

I consent to:

- Participating in focus group interview with the researcher about the topic as described in the Information Statement Yes / No
- Allowing the interviewer to audiotape the interview Yes / No
- Allowing the researcher, or his designated assistant, to transcribe the interview. Yes / No

I further consent to the following choices:

- Having a written transcription of the interview presented to me for reviewing. Yes / No
- Being quoted in the final report Yes / No
  - Quoted by name Yes / No
  - Quoted by pseudonym Yes / No
  - Quoted anonymously Yes / No

I understand that my personal information will remain confidential to the researchers. I have had the opportunity to have questions answered to my satisfaction.

Print Name:
Signature: Date:
Contact Details (to arrange interviews): Phone
Appendix K

Procedures for Maintaining Privacy and Confidentiality and for Matching Student Data with Itinerant Surveys

Questionnaires

1. The itinerants will complete the Itinerants demographics questionnaire, and seal it in an envelope. They will then place this envelope in a second envelope and write their name on this second envelope.

2. The itinerants will complete an itinerant activities questionnaire for each of their students, and seal each in an envelope and place this envelope inside a second envelope, with the student’s name on the outside of the second envelope.

3. The Executive Teacher will collect the completed questionnaires, sealed in their envelopes, and make a list of the itinerants and their students with completed questionnaires. She will assign a letter code to each itinerant and a number code to each student thus: B3 refers to the third student of teacher B.

4. The Executive Teacher will open and discard the outside envelopes, and write the participant numbers on each inner envelope. She will then give the sealed, numbered second envelopes containing the questionnaires to the researcher.

5. The Executive Teacher will have a secure list of itinerant and student names and the participant number assigned to them. This list will not be available to the researcher and will be destroyed upon completion of the research.
Appendix K

Procedures for Maintaining Privacy and Confidentiality and for Matching Student Data with Itinerant Surveys, continued

Student files

1. The student files are kept in a secure filing cabinet in the Executive Teacher’s office and the researcher will only access these student files with the Executive Teacher present.

2. No originals or copies of original documents will be removed from the office.

3. The Executive Teacher will provide each student file to the researcher, and identify the participant code. These codes will have been assigned by the Executive Teacher during the collation of the questionnaires.

4. The researcher will record this code on the blank recording forms, and no names of persons will be recorded at any stage.

5. No details will be recorded on the researcher’s database that will allow identification of any student, teacher or school.
Appendix L

Cover Letters from Executive Teacher to Parents, Caregivers, and Students Over 18

L1: Initial letter

Student Support-Hearing
Maribyrnong Centre
Alberga Street
Kaleen ACT 2617

Dear Parents,

In the next few days you will receive a letter from Mr John Davidson-Mowle inviting you to participate in a research project as part of his PhD program within the School of Education at the University of Newcastle.

John’s research will examine the factors that influence the activities provided by Support Teachers – Hearing to students with hearing impairment. John will be asking for permission to access your child’s Support Teacher – Hearing file. The information he will gather from the file will include information about your child’s age, year level, hearing loss and learning needs. The information will be de-identified. You can be assured that it will not be possible to identify your child from any of the information collected.

There is very limited research in the area of children with hearing impairment in Australia and particularly in the area of students receiving service from Support Teachers – Hearing. The more students that participate in the study, the greater the validity of the results. I would ask you to consider giving permission to John to access your child’s file. The results of this research could benefit many students with hearing impairment in the future.

If you have any questions, please do not hesitate to contact me on 6205 6792.

Yours sincerely,

Barbara Rayner

20 August 2012
Appendix L continued.

Cover Letters from Executive Teacher to Parents, Caregivers and Students Over 18

L2: Follow up letter

Following is the letter sent to you last term asking for permission to obtain anonymous information from the file held about your son or daughter.

You may still wish to participate in this research project so the following information has been made available again.

If you wish to participate, please sign on the last page, and return the signed form either:

- directly to the Executive Teacher by means of the Stamped Addressed Envelope,
- or through your Itinerant Hearing Support Teacher,
- or email your consent to John Davison-Mowle at John.Davison-Mowle@uon.edu.au
Appendix M

List of Other Activities, Reclassified

<table>
<thead>
<tr>
<th>Student</th>
<th>Other activity as recorded on original spreadsheet</th>
<th>Reclassified category in prepared spreadsheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>B4</td>
<td>Organizing transcripts</td>
<td>Notetaking in mainstream lessons</td>
</tr>
<tr>
<td>B5</td>
<td>Organizing transcripts for TV program</td>
<td>Notetaking in mainstream lessons</td>
</tr>
<tr>
<td>C1</td>
<td>Integrating life skills into activities</td>
<td>Assisting with other student needs</td>
</tr>
<tr>
<td></td>
<td>accommodating physical needs,</td>
<td>Assisting with other student needs</td>
</tr>
<tr>
<td></td>
<td>getting together with other students</td>
<td>Teaching a social/behavioural program</td>
</tr>
<tr>
<td>C2</td>
<td>Integrating life skills</td>
<td>Assisting with other student needs</td>
</tr>
<tr>
<td></td>
<td>Introducing IT//art?</td>
<td>Teaching other subjects, following Class program</td>
</tr>
<tr>
<td></td>
<td>Communication system</td>
<td>Assisting with other student needs</td>
</tr>
<tr>
<td></td>
<td>social skills, behav.m'nt/training,</td>
<td>Teaching a social/behavioural program</td>
</tr>
<tr>
<td></td>
<td>getting together with other students</td>
<td>Teaching a social/behavioural program</td>
</tr>
<tr>
<td>C3</td>
<td>Transition to work</td>
<td>Teaching other subjects, following Class program</td>
</tr>
<tr>
<td></td>
<td>life skills</td>
<td>Assisting with other student needs</td>
</tr>
<tr>
<td></td>
<td>interaction with deaf community</td>
<td>Teaching a social/behavioural program</td>
</tr>
<tr>
<td>F6</td>
<td>Transition program (written at interview)</td>
<td>Teaching other subjects, following Class program</td>
</tr>
<tr>
<td>G1</td>
<td>Driving student to work experience</td>
<td>Teaching other subjects, following Class program</td>
</tr>
<tr>
<td></td>
<td>attending deaf sport/art activities</td>
<td>Teaching a social/behavioural program</td>
</tr>
<tr>
<td>G4</td>
<td>Attending deaf sport/art events</td>
<td>Teaching a social/behavioural program</td>
</tr>
<tr>
<td>G5</td>
<td>Attending deaf sport/art events</td>
<td>Teaching a social/behavioural program</td>
</tr>
<tr>
<td>I1</td>
<td>Ling 7 sound test</td>
<td>Assisting with hearing technology</td>
</tr>
<tr>
<td>I2</td>
<td>Ling 7 sound test</td>
<td>Assisting with hearing technology</td>
</tr>
<tr>
<td></td>
<td>Assessment</td>
<td>Assessment (new category)</td>
</tr>
</tbody>
</table>
# Appendix M

## List of Other Activities, Reclassified

<table>
<thead>
<tr>
<th>Student</th>
<th>Other activity as recorded on original spreadsheet</th>
<th>Reclassified category in prepared spreadsheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>I3</td>
<td>Ling 7 sounds</td>
<td>Assisting with hearing technology</td>
</tr>
<tr>
<td>I4</td>
<td>Ling 7 sound test</td>
<td>Assisting with hearing technology</td>
</tr>
<tr>
<td></td>
<td>Observe/monitor social interaction and participation in preschool room</td>
<td>Assessment (new category)</td>
</tr>
<tr>
<td></td>
<td>Assessment</td>
<td>Assessment (new category)</td>
</tr>
<tr>
<td>I5</td>
<td>Ling 7 sound test</td>
<td>Assisting with hearing technology</td>
</tr>
<tr>
<td>J3</td>
<td>Discussing assignments &amp; giving feedback</td>
<td>Teaching study/organization skills</td>
</tr>
<tr>
<td>J4</td>
<td>Support assignment writing</td>
<td>Teaching study/organization skills</td>
</tr>
<tr>
<td>J8</td>
<td>Assist with eating</td>
<td>Assisting with other student needs</td>
</tr>
<tr>
<td>O1</td>
<td>Participate in circle times activities</td>
<td>Teaching literacy/English, following Class program</td>
</tr>
<tr>
<td></td>
<td>Observe student in various activities</td>
<td>Assessment (new category)</td>
</tr>
<tr>
<td></td>
<td>Testing and evaluating language</td>
<td>Assessment (new category)</td>
</tr>
<tr>
<td>O2</td>
<td>Participate in circle times activities</td>
<td>Teaching literacy/English, following Class program</td>
</tr>
<tr>
<td></td>
<td>Observe student in various activities</td>
<td>Assessment (new category)</td>
</tr>
<tr>
<td></td>
<td>Testing language /evaluating progress</td>
<td>Assessment (new category)</td>
</tr>
</tbody>
</table>
Appendix N

Codebook for SPSS variables from surveys and student files

Table N1
Teacher Variables From the Teacher Demographics Questionnaires N = 14

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Range</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCode</td>
<td>Teacher code</td>
<td>A to O</td>
<td>Nominal</td>
</tr>
<tr>
<td>ItinExp</td>
<td>Experience as itinerant hearing teacher</td>
<td>0-2 years, 2-10 yrs, 11-20 yrs, &gt;20</td>
<td>Ordinal</td>
</tr>
<tr>
<td>TODQualifs</td>
<td>Teacher of the deaf qualifications</td>
<td>None, Graduate, Post graduate, Masters</td>
<td>Ordinal</td>
</tr>
<tr>
<td>TchBground</td>
<td>Teaching background</td>
<td>Preschool, Primary (0-6), Secondary (7-10), College (11&amp; 12)</td>
<td>Nominal</td>
</tr>
<tr>
<td>NoStudents</td>
<td>Number of students on caseload</td>
<td>From 2 to 8 students</td>
<td>Scale</td>
</tr>
<tr>
<td>TotalSsHrs</td>
<td>Total caseload hours per week</td>
<td>From 2-24 hours</td>
<td>Scale</td>
</tr>
</tbody>
</table>
Appendix N

Codebook for SPSS Variables from Surveys and Student Files.  

Table N2

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Range</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SsCode</td>
<td>Student code</td>
<td>A1-O4, e.g. K3 = the third student taught by teacher K</td>
<td>Nominal</td>
</tr>
<tr>
<td>Grade</td>
<td>Grade</td>
<td>From -1 (preschool), 0 (Kindergarten) to yr12</td>
<td>Scale</td>
</tr>
<tr>
<td>GradeCateg</td>
<td>Category of grade</td>
<td>Preschool, Primary, Secondary, College (11&amp; 12)</td>
<td>Nominal</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>Percentage of support provided by withdrawal from the classroom</td>
<td>From 0-100%</td>
<td>Scale</td>
</tr>
<tr>
<td>Hours</td>
<td>Number of support hours per week</td>
<td>From 1 - 9 hours</td>
<td>Scale</td>
</tr>
<tr>
<td>Sessions</td>
<td>Number of sessions per week</td>
<td>From 1-9 sessions</td>
<td>Scale</td>
</tr>
</tbody>
</table>
### Table N3

**Variables for Frequency of Teaching Activity from Teacher Activity Questionnaire, N = 59**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Range: Sessions per year</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>LCPFreq</td>
<td>Teaching literacy with the class program</td>
<td>0-360</td>
</tr>
<tr>
<td>2.</td>
<td>LHTFreq</td>
<td>Teaching literacy with the itinerant's program</td>
<td>0-360</td>
</tr>
<tr>
<td>3.</td>
<td>OCPFreq</td>
<td>Teaching other subjects with the class program</td>
<td>0-200</td>
</tr>
<tr>
<td>4.</td>
<td>OHTFreq</td>
<td>Teaching other subjects with itinerant teacher's program</td>
<td>0-360</td>
</tr>
<tr>
<td>5.</td>
<td>SSkFreq</td>
<td>Teaching study skills</td>
<td>0-360</td>
</tr>
<tr>
<td>6.</td>
<td>VCPFreq</td>
<td>Teaching the vocabulary of the class program</td>
<td>0-360</td>
</tr>
<tr>
<td>7.</td>
<td>TGVFreq</td>
<td>Teaching general vocabulary</td>
<td>0-360</td>
</tr>
<tr>
<td>8.</td>
<td>NTFreq</td>
<td>Notetaking</td>
<td>0-360</td>
</tr>
<tr>
<td>9.</td>
<td>TSpFreq</td>
<td>Teaching speech skills</td>
<td>0-360</td>
</tr>
<tr>
<td>10.</td>
<td>AEFreq</td>
<td>Teaching auditory skills with explicit targets</td>
<td>0-360</td>
</tr>
<tr>
<td>11.</td>
<td>AIFreq</td>
<td>Teaching auditory skills with integrated targets</td>
<td>0-360</td>
</tr>
<tr>
<td>12.</td>
<td>SLEFreq</td>
<td>Teaching spoken language with explicit targets</td>
<td>0-360</td>
</tr>
<tr>
<td>13.</td>
<td>SLIFreq</td>
<td>Teaching spoken language with integrated targets</td>
<td>0-360</td>
</tr>
<tr>
<td>14.</td>
<td>CONFreq</td>
<td>Teaching using conversation</td>
<td>0-360</td>
</tr>
<tr>
<td>15.</td>
<td>TSGFreq</td>
<td>Teaching signing</td>
<td>0-360</td>
</tr>
<tr>
<td>16.</td>
<td>SIFreq</td>
<td>Sign interpreting</td>
<td>0-200</td>
</tr>
<tr>
<td>17.</td>
<td>SBPFreq</td>
<td>Implementing a social/behavioural program</td>
<td>0-360</td>
</tr>
<tr>
<td>18.</td>
<td>CPFreq</td>
<td>Consulting with parents</td>
<td>0-160</td>
</tr>
<tr>
<td>19.</td>
<td>CSSFreq</td>
<td>Consulting with the school staff</td>
<td>0-360</td>
</tr>
<tr>
<td>20.</td>
<td>AHTFreq</td>
<td>Assisting with hearing technology</td>
<td>0-200</td>
</tr>
<tr>
<td>21.</td>
<td>PSSFreq</td>
<td>Presenting to school staff</td>
<td>0-8</td>
</tr>
<tr>
<td>22.</td>
<td>RPMFreq</td>
<td>Attending review and planning meetings</td>
<td>0-20</td>
</tr>
<tr>
<td>23.</td>
<td>ASSFreq</td>
<td>Assessment</td>
<td>0-44</td>
</tr>
</tbody>
</table>
## Appendix N

Codebook for SPSS Variables from Surveys and Student Files

### Table N4

**Variables from Surveys for Percentage of Weekly Time Used for Teaching Activity, \( N = 59 \)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Range (%)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. LCPPerc</td>
<td>Teaching literacy with the class program</td>
<td>0-95</td>
<td>Scale</td>
</tr>
<tr>
<td>2. LHTPerc</td>
<td>Teaching literacy with the itinerant's program</td>
<td>0-46</td>
<td>Scale</td>
</tr>
<tr>
<td>3. OCPPerc</td>
<td>Teaching other subjects with the class program</td>
<td>0-45</td>
<td>Scale</td>
</tr>
<tr>
<td>4. OHTPerc</td>
<td>Teaching other subjects with itinerant teacher's program</td>
<td>0-46</td>
<td>Scale</td>
</tr>
<tr>
<td>5. SSkPerc</td>
<td>Teaching study skills</td>
<td>0-17</td>
<td>Scale</td>
</tr>
<tr>
<td>6. VCPPer</td>
<td>Teaching the vocabulary of the class program</td>
<td>0-05</td>
<td>Scale</td>
</tr>
<tr>
<td>7. TGVPerc</td>
<td>Teaching general vocabulary</td>
<td>0-23</td>
<td>Scale</td>
</tr>
<tr>
<td>8. NTPerc</td>
<td>Notetaking</td>
<td>0-50</td>
<td>Scale</td>
</tr>
<tr>
<td>9. TSpPerc</td>
<td>Teaching speech skills</td>
<td>0-15</td>
<td>Scale</td>
</tr>
<tr>
<td>10. AEPer</td>
<td>Teaching auditory skills with explicit targets</td>
<td>0-29</td>
<td>Scale</td>
</tr>
<tr>
<td>11. AIPerc</td>
<td>Teaching auditory skills with integrated targets</td>
<td>0-70</td>
<td>Scale</td>
</tr>
<tr>
<td>12. SLEPerc</td>
<td>Teaching spoken language with explicit targets</td>
<td>0-26</td>
<td>Scale</td>
</tr>
<tr>
<td>13. SLIPerc</td>
<td>Teaching spoken language with integrated targets</td>
<td>0-38</td>
<td>Scale</td>
</tr>
<tr>
<td>14. CONPer</td>
<td>Teaching using conversation</td>
<td>0-30</td>
<td>Scale</td>
</tr>
<tr>
<td>15. TSGPer</td>
<td>Teaching signing</td>
<td>0-15</td>
<td>Scale</td>
</tr>
<tr>
<td>16. SIPer</td>
<td>Sign interpreting</td>
<td>0-30</td>
<td>Scale</td>
</tr>
<tr>
<td>17. SBPPerc</td>
<td>Implementing a social/ behavioural program</td>
<td>0-30</td>
<td>Scale</td>
</tr>
<tr>
<td>18. CPPer</td>
<td>Consulting parents</td>
<td>0-19</td>
<td>Scale</td>
</tr>
<tr>
<td>19. CSSPer</td>
<td>Consulting school staff</td>
<td>0-11</td>
<td>Scale</td>
</tr>
<tr>
<td>20. AHTPerc</td>
<td>Assisting with hearing technology</td>
<td>0-10</td>
<td>Scale</td>
</tr>
<tr>
<td>21. PSSPer</td>
<td>Presenting to school staff</td>
<td>0-6</td>
<td>Scale</td>
</tr>
<tr>
<td>22. RPMPer</td>
<td>Attending review and planning meetings</td>
<td>0-10</td>
<td>Scale</td>
</tr>
<tr>
<td>23. ASSPer</td>
<td>Assessment</td>
<td>0-14</td>
<td>Scale</td>
</tr>
</tbody>
</table>
Appendix N

Codebook for SPSS Variables from Surveys and Student Files

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Range</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Age</td>
<td>4-18 years</td>
<td>Scale</td>
</tr>
<tr>
<td>Gender</td>
<td>Gender</td>
<td>Female, male</td>
<td>Nominal</td>
</tr>
<tr>
<td>SchType</td>
<td>School type</td>
<td>Preschool, Primary (0-6), Secondary (7-10), College (11&amp; 12), Special</td>
<td>Nominal</td>
</tr>
<tr>
<td><strong>Audiological variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AvBetter</td>
<td>Mean of hearing loss in better ear</td>
<td>14dB - 103dB</td>
<td>Scale</td>
</tr>
<tr>
<td>CatLoss</td>
<td>Category of hearing loss in better ear</td>
<td>Normal, mild, moderate, moderate/severe, severe, profound</td>
<td>Ordinal</td>
</tr>
<tr>
<td>TypeLoss</td>
<td>Type of loss</td>
<td>Sensorineural, mixed</td>
<td>Nominal</td>
</tr>
<tr>
<td>FM</td>
<td>FM use</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>FMAss</td>
<td>Assistance required for use of FM</td>
<td>No info., Assistance requested, Consistent use, Rejected, N/a</td>
<td>Nominal</td>
</tr>
<tr>
<td>CIorHA</td>
<td>Hearing aids and cochlear implants</td>
<td>Bilateral CI, Bilateral HA, HA+CI, 1HA, none</td>
<td>Nominal</td>
</tr>
<tr>
<td>RoomAc</td>
<td>Room acoustics information</td>
<td>No info, Noisy room, Assistance requested</td>
<td>Nominal</td>
</tr>
<tr>
<td><strong>Language assessment variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LangTAvCat</td>
<td>Availability of a language assessment</td>
<td>None available, available</td>
<td>Nominal</td>
</tr>
<tr>
<td>TesterCat</td>
<td>Category of the language tester</td>
<td>Current HT, past HT, speech therapist</td>
<td>Nominal</td>
</tr>
<tr>
<td>TestAgeCat</td>
<td>Age of the language test</td>
<td>&lt;1 year, 1-2 years, &gt;2 years</td>
<td>Ordinal</td>
</tr>
<tr>
<td>TestNameCat</td>
<td>Name of the language test</td>
<td>e.g. CASL, CELF, PPV, Bracken, Observations, St.Gabriel’s, Combinations of these</td>
<td>Nominal</td>
</tr>
<tr>
<td>LangAbility</td>
<td>Category of language ability/need</td>
<td>Above average, age appropriate, Mild need, Moderate/severe</td>
<td>Nominal</td>
</tr>
<tr>
<td>CommMode</td>
<td>Communication mode</td>
<td>Oral, sign dependent, sign assisted</td>
<td>Nominal</td>
</tr>
</tbody>
</table>
## Appendix N

Codebook for SPSS Variables from Surveys and Student Files

### Table N6

**Student variables From Ascertainment Meeting Reports in Student Files, N = 10**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Range</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus codes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMRAvail</td>
<td>Availability of an Ascertainment meeting report</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>AMRFocus</td>
<td>Ascertainment Focus areas</td>
<td>List of main areas</td>
<td>Nominal</td>
</tr>
<tr>
<td>FocusLang</td>
<td>Focus on Language recorded</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>FocusAud</td>
<td>Focus on Audition recorded</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>FocusSocSk</td>
<td>Focus on Social skills recorded</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>FocusSpeech</td>
<td>Focus on Speech recorded</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>FocusConv</td>
<td>Focus on Conversation recorded</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>FocusVocab</td>
<td>Focus on Vocabulary recorded</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td>FocusTrans</td>
<td>Focus on Transition recorded</td>
<td>Yes, No</td>
<td>Nominal</td>
</tr>
<tr>
<td><strong>Participation and access codes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ParticSD</td>
<td>Social participation need</td>
<td>Codes 1 (low) - 3 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>ParticCurric</td>
<td>Curriculum participation need</td>
<td>Codes 1 (low) - 3 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>ParticComm</td>
<td>Communication participation need</td>
<td>Codes 1 (low) - 4 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>ParticBehav</td>
<td>Behaviour participation need</td>
<td>Codes 1 (low) - 3 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>ParticLitNum</td>
<td>Literacy &amp; Numeracy participation need</td>
<td>Codes 1 (low) - 4 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>AccComm</td>
<td>Communication access need</td>
<td>Codes 1 (low) - 4 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>AccMob</td>
<td>Mobility access need</td>
<td>Codes 1 (low) - 4 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>AccSaf</td>
<td>Safety access need</td>
<td>Codes 1 (low) - 3 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>AccPCH</td>
<td>Health access need</td>
<td>Codes 1 (low) - 2 (high)</td>
<td>Ordinal</td>
</tr>
<tr>
<td>AccPCD</td>
<td>Diet access need</td>
<td>Codes 1 (low) - 2 (high)</td>
<td>Ordinal</td>
</tr>
</tbody>
</table>
## Appendix O

### Codebook for Interviews and Written Comments

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student themes</strong></td>
<td><strong>Student</strong> Any other factor relating to the needs or characteristics of students of a general or specific nature that cannot be coded at a child node below e.g. “she has great needs.”</td>
</tr>
<tr>
<td></td>
<td><strong>Speech</strong> A reference to the student's speech/articulation/voice tone ability as being a factor in the choice of activities, either positive or negative, e.g. “he has good speech so ... Or he needs help with pronouncing specific words” not language, not “talking”</td>
</tr>
<tr>
<td></td>
<td><strong>Social</strong> Reference to assisting the student with social needs, including making friends, mixing in the playground, including deaf friends, deaf identity activities</td>
</tr>
<tr>
<td></td>
<td><strong>Other disability</strong> Any reference to teacher activities being influenced by any other disability unrelated to hearing or language, e.g. Cognitive, physical, autism, vision</td>
</tr>
<tr>
<td></td>
<td><strong>Literacy</strong> Reference to reading and writing difficulties of students even if just: “I help her with literacy work”</td>
</tr>
<tr>
<td></td>
<td><strong>Large gap</strong> Specific reference to a large gap between the work of the class and the skills of the student, or in so many words, such as ”she can't handle the work of the class&quot; it's way too hard for her, she struggles a lot, etc.</td>
</tr>
<tr>
<td></td>
<td><strong>Language &amp; communication</strong> Any reference to the language/communication ability or needs of the student having an influence on the choice of teacher activities, even if just &quot;I work on her communication skills, or her oral language, etc. Including ESL reference</td>
</tr>
<tr>
<td></td>
<td><strong>Interests engagement</strong> Any reference to the choice of activities being determined in any way by the interests of the student, or the need to engage the student, such as likes and dislikes of the student, e.g. They like this game, they like talking about football, I want to engage her, etc.</td>
</tr>
<tr>
<td></td>
<td><strong>Integration of activities</strong> Reference to two or more goals/needs being met together such as &quot;I work on her speech when I do the spelling list, I do language work through conversation”</td>
</tr>
<tr>
<td></td>
<td><strong>Hearing loss</strong> Reference to the hearing loss of the student being either important or not important, such as, &quot; She is very deaf and ...&quot; Hearing loss is not a good indication of her need&quot; She only has a mild loss, but ...</td>
</tr>
</tbody>
</table>
### Codebook for Interviews and Written Comments.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional-behavioural</td>
<td>Any reference to the student's moods, including difficult behaviour, that limit or influence the choice or use of teacher activities. Does not include student choice or preference for other activities, but rather unreasonable or unpredictable behaviour. Also includes teaching a behaviour or emotional program.</td>
</tr>
<tr>
<td>Devices</td>
<td>Any reference to the need to assist the student or class teacher with the aids, FM, sound field, implant etc.</td>
</tr>
<tr>
<td>Choice</td>
<td>Any reference to the student determining the choice of activities, either by refusal of some, actively choosing others, or by student request such as requesting help with specific academic materials.</td>
</tr>
<tr>
<td>Audition skills</td>
<td>Any reference to the listening ability/needs of the student and the choice of activities to accommodate this, including any use of specific programs for auditory skills.</td>
</tr>
<tr>
<td>Assessment of language</td>
<td>Reference to any language test such as CASL, PLS-4, language sampling or any way in which the language ability given was assessed, including using their intuition or experience.</td>
</tr>
<tr>
<td>Assessment</td>
<td>Any assessment referred to, other than language assessment. Also includes references to on-going assessments, or any assessment method that is used to guide the activities.</td>
</tr>
<tr>
<td>Academic</td>
<td>Student academic ability or academic needs, e.g. They need help with understanding new vocabulary, assignments, learning the spelling etc., or they have a lot of difficulty reading, with maths. Any specific reference to literacy skills can be coded as literacy, and it can be coded here as well if it also refers to other academic material.</td>
</tr>
<tr>
<td>Influences from other sources</td>
<td>Specific reference to the mainstream school policies or directions, excluding specific references to the class teacher, class programs, IEPs, teacher’s aide</td>
</tr>
<tr>
<td>School</td>
<td>Any reference to the use of IEP or other school based planning meetings or review meetings/documents as being a factor in the choice of teacher activities</td>
</tr>
</tbody>
</table>
Appendix P
Basic Themes from Individual Interviews for 10 Itinerant Teachers

<table>
<thead>
<tr>
<th>Influence</th>
<th>Number of references</th>
<th>Number of teachers</th>
<th>Spontaneous first mention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language ability</td>
<td>130</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Class teacher - negotiations</td>
<td>101</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Listening ability</td>
<td>93</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Academic program of the regular class</td>
<td>87</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Hearing loss and hearing devices</td>
<td>71</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Family</td>
<td>64</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Role definition of individual itinerants</td>
<td>59</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Poor room acoustics</td>
<td>50</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Itinerant policy to withdrawal</td>
<td>49</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Language assessments</td>
<td>46</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Student engagement-interest</td>
<td>45</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Literacy ability</td>
<td>35</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Speech ability</td>
<td>33</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Emotional &amp; behavioural maturity</td>
<td>31</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Integration of student goals</td>
<td>30</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Student choice</td>
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<td>Conversation to assist students</td>
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<td>Individual leaning plans</td>
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</tr>
<tr>
<td>High student support hours</td>
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<td>Room distractions</td>
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<td>Time shortages</td>
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<td>Social - assisting with student needs</td>
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<tr>
<td>Consultation –information and planning</td>
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<tr>
<td>Other disabilities</td>
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<td>6</td>
<td></td>
</tr>
<tr>
<td>Accommodations &amp; inclusion needs</td>
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<tr>
<td>Independence needs</td>
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<tr>
<td>Low student support hours</td>
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<td>School management</td>
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<td>Itinerant mainstream teaching background</td>
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<td>Adaptability to unique situation</td>
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<tr>
<td>Provision of alternative activities</td>
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<td>School type</td>
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<tr>
<td>Disengagement of student in regular classes</td>
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<tr>
<td>Misperception by regular school</td>
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<td>Itinerant supervisor</td>
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<tr>
<td>Aide</td>
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Appendix Q

Communalities after Extraction with Principal Axis Factoring

<table>
<thead>
<tr>
<th>Itinerant teacher activity</th>
<th>Initial</th>
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<tbody>
<tr>
<td>Teaching literacy with the class program</td>
<td>.856</td>
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<tr>
<td>Teaching other subjects with class program</td>
<td>.959</td>
</tr>
<tr>
<td>Teaching other subjects with itinerant teacher's program</td>
<td>.784</td>
</tr>
<tr>
<td>Teaching study skills</td>
<td>.849</td>
</tr>
<tr>
<td>Teaching the vocabulary of the class program</td>
<td>.907</td>
</tr>
<tr>
<td>Teaching general vocabulary</td>
<td>.793</td>
</tr>
<tr>
<td>Notetaking</td>
<td>.902</td>
</tr>
<tr>
<td>Teaching speech skills</td>
<td>.889</td>
</tr>
<tr>
<td>Teaching auditory skills with explicit targets</td>
<td>.938</td>
</tr>
<tr>
<td>Teaching auditory skills with integrated targets</td>
<td>.930</td>
</tr>
<tr>
<td>Teaching spoken language with explicit targets</td>
<td>.850</td>
</tr>
<tr>
<td>Teaching spoken language with integrated targets</td>
<td>.930</td>
</tr>
<tr>
<td>Teaching using conversation</td>
<td>.901</td>
</tr>
<tr>
<td>Teaching signing</td>
<td>.833</td>
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<tr>
<td>Sign Interpreting</td>
<td>.869</td>
</tr>
<tr>
<td>Implementing a social/behavioural program</td>
<td>.845</td>
</tr>
<tr>
<td>Consulting with school staff</td>
<td>.742</td>
</tr>
<tr>
<td>Assisting with hearing technology</td>
<td>.741</td>
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<tr>
<td>Presenting to school staff</td>
<td>.405</td>
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<tr>
<td>Teaching literacy with the itinerant's program</td>
<td>.896</td>
</tr>
<tr>
<td>Consulting with parents</td>
<td>.419</td>
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</tbody>
</table>
Appendix R

Scree Plot for 21 Itinerant Activities

Figure Q. Scree plot of 21 Itinerant activities
## Appendix S

### Assistance Requested in ILP and Assistance Provided

<table>
<thead>
<tr>
<th>Nature of assistance</th>
<th>Percentage(^a) requiring assistance</th>
<th>Percentage(^b) receiving assistance weekly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing listening skills</td>
<td>81</td>
<td>88</td>
</tr>
<tr>
<td>Facilitating language development</td>
<td>78</td>
<td>85</td>
</tr>
<tr>
<td>Providing speech remediation</td>
<td>70</td>
<td>59</td>
</tr>
<tr>
<td>Assisting school staff with adjustments</td>
<td>52</td>
<td>68</td>
</tr>
<tr>
<td>Assisting with the use of an FM</td>
<td>33</td>
<td>27(^c)</td>
</tr>
<tr>
<td>Assisting with a social or behavioural program</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Developing literacy skills</td>
<td>33</td>
<td>71</td>
</tr>
<tr>
<td>Assisting with subjects other than literacy</td>
<td>26</td>
<td>52</td>
</tr>
<tr>
<td>Assisting with cognitive development</td>
<td>19(^d)</td>
<td></td>
</tr>
<tr>
<td>Teaching study skills</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>Teaching the vocabulary of the class program</td>
<td>11</td>
<td>54</td>
</tr>
</tbody>
</table>

\(^a\)\(n=27\). \(^b\)\(N=59\). \(^c\)This percentage relates to Providing assistance with hearing technology, which includes hearing aids and cochlear implants, in addition to the FM. Three of these five students have a diagnosed disability, although only one is a cognitive disability. \(^d\)No teaching activity is related directly to this need.
Appendix T

Scatter Plot of Teacher Code and Percentage Withdrawal

Figure T. Scatter plot of percentage of withdrawal used by ACT itinerant teachers