

**Floating in the Mainstream: New Zealand Deaf Students'
Learning and Social Participation Experiences in Tertiary
Education**

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ABSTRACT

Deaf students are entering tertiary education in much higher numbers than ever before. With the advent of increased inclusion for deaf students in local schools in New Zealand, the expectation of these students is that they will be able to access tertiary education in the same way as their hearing peers. The aim of this project was to identify current learning and social participation experiences of deaf students within New Zealand tertiary institutions, to obtain an understanding of what the perceived barriers to successful outcomes were, and what the possible solutions to those barriers might be. The research used a sequential mixed methods procedure, in that the initial nested quantitative and qualitative written survey was followed by an in-depth qualitative interview with a selected sample of participants. In all, 64 students completed the written survey and I selected eight of those students to interview. Findings indicated that, access to accommodations, attitudinal barriers, level of social integration, and ease of communication were influential to their learning and participation experiences. Recommendations that aim to address the identified barriers and enhance the tertiary education experiences and outcomes for this population, included the need for students to have strong self-advocacy skills and familiarity with the range of resources available, including new technology. An increased awareness within tertiary institutions of deaf students' academic and social needs must be at the forefront of any move towards inclusive education, where both deaf and hearing students are equal and valued participants.

STATEMENT OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Signed _____

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CHAPTER ONE – INTRODUCTION

Deaf students must be participants at all times and at all levels in order to identify problem areas and participate in the creation, implementation and evaluation of solutions. In each case, the goal should be the creation of a campus where all services, settings and activities are fully accessible to all students, and decisions about when and how to participate made by students from a position of choice and equal opportunity.

(Mudgett-DeCaro & Foster, 1992, p. 140)

Introduction

The importance of gaining a tertiary education has never been greater. Education beyond the secondary school level is crucial to people's ability to enter and successfully participate in the increasingly complex work environment of today. The number of students accessing tertiary education in New Zealand has increased steadily over recent years, including deaf students who are now entering tertiary education in higher numbers than ever before. In 2006, the New Zealand Household and Disability Survey reported that 6,600 adults who identified as having a hearing 'disability' were enrolled in formal education or training, which equates to 4% of the total population with some level of hearing loss (Statistics New Zealand, 2006). As Ozolins and Bridge concluded, "probably no area in the life of deaf people has changed as radically as education" (1999, p.51).

With the advent of increased mainstreaming in primary and secondary schooling for most D/deaf and hearing-impaired (DHI – as described on pg 7) students since the 1980s, the expectation of these students and their families is that they will be able to

access tertiary education in the same way as their hearing peers. It follows, that their expectation is to be able to secure employment at the end of their studies that is commensurate with the level of qualification they hold, and their abilities in general. The reality for these students, however, seems to be that once they leave the compulsory education sector, the support and guidance provided which enables them to be included and complete their studies successfully, has largely been at the whim of the tertiary institution they attend.

Purpose of the Study

The aim of this research project was to identify the learning and social participation experiences of DHI students in New Zealand tertiary institutions, and to provide recommendations that address barriers, and enhance the implementation of both government and tertiary institutions' policies into practice. In New Zealand, apart from the Advance Centre, which was available to assist with the resource needs of DHI students in Auckland from 2004 until early 2010 when it closed, tertiary institutions do not have specialist support services for DHI students. Instead, the institutions' generic disability support offices assess student needs and provide a range of resources. In order to ensure that DHI students are receiving an equitable education alongside their hearing peers, it is vital that we obtain an understanding of current barriers to successful outcomes and further, the possible solutions to those barriers for DHI students in mainstream tertiary environments. Increased knowledge and understanding of DHI people's experiences in the tertiary education sector can provide essential information for professionals and programmes serving students who are DHI, and thereby increase the percentage of DHI students who enrol in, and successfully complete, their chosen courses of study.

I chose this area to research as it follows from my previous training and experience as a teacher of the deaf, and my continuing involvement with the Deaf community in New Zealand. I have worked as a lecturer specializing in the field of inclusive education, and as a disability services coordinator in the tertiary sector. The issue of how best to support DHI students so that they are able to achieve their chosen career goals is highly significant for those charged with ensuring the appropriate supports and resources are both accessible and cost effective. Previous disability coordinators' conferences in New Zealand have highlighted the fact that this is a significant issue for the majority of disability coordinators in New Zealand at present.

This chapter first provides background information on the nature of hearing loss and the number of people affected by hearing loss in New Zealand. It then defines the terminology used in this study, and explains the rationale behind use of the term *hearing-impaired* rather than *hard of hearing* in the New Zealand context. It proceeds to a discussion of the history of deaf education in New Zealand, and concludes with the significance of this study to contemporary New Zealand policy and practice.

Hearing Loss in New Zealand

Living with Disability in New Zealand (NZ Ministry of Health, 2004) reported on results from the Household Disability Survey (2001), which identified that hearing loss affects 10.3% of New Zealanders. This equates to approximately 410,000 people based on current population figures. Hearing loss was most common among the older age groups. A third of all men (35%) and a quarter of all women (24%) aged 75 and older had a hearing loss, compared to just 3% of men and women in the 15-44 age group, and just 2% of children aged 0-14 years. This is remarkably similar to Australian statistics, where 10.2% of population self-reported having partial or complete deafness, comprising 1.4% of children 0-14 years and being most common in the older age

groups, with 42% of those over 75 indicating some hearing loss (Australian Bureau of Statistics, 2006).

Data available on the education of DHI students in New Zealand is extremely limited. In March 2007, a Deaf Education Aotearoa New Zealand (DEANZ) report identified 2,407 children aged 0-18 years receiving specialist deaf education services. However, it did not contain information about students' transition arrangements upon leaving school (P. Wise, personal communication, 12 February 2009). Therefore, it is difficult to estimate the number of DHI school-leavers who go onto tertiary study. While the New Zealand Ministry of Education (MOE) records information about successful completions of national examinations, they do not identify students as DHI, and further, individual school records may or may not, depending on their own standards for recording data. Unfortunately, there is still no centralized record of DHI school-leavers' academic achievement that exists at national or regional level nor any indication of where students progress to once they have left secondary school (B. Coffey, MOE, personal communication, 27 October, 2010). This is despite a recommendation to implement this database in a New Zealand National Foundation of the Deaf report regarding DHI students' access to tertiary education (Logan, 1995). Of all New Zealand secondary school leavers in 1999, an estimated 51.5% went on to further education and training in 2000. Those leaving school without certification decreased from 18.2% to 5.3% over the period 2002-2008 (NZ Ministry of Education, 2009b). It follows that some of these students will be DHI, but it is impossible to determine the number of students from the records kept.

Tertiary education providers ask students on enrolment to disclose disabilities or impairments that may affect their studies, and routinely report these data to the Tertiary Education Commission (TEC). Thus, students self-identify as having a disability, although it should be noted, that it is not mandatory for a student to answer the question.

Consequently, information provided in the following statistics is only an estimate. Although over 20,000 New Zealand tertiary students disclosed a disability in 2009 equating to 4.9% of all domestic students, data is not routinely reported on the type of disability disclosed. Further, many students do not declare their hearing loss initially on their tertiary institution's enrolment form, and may never access the available support services. Therefore, ascertaining the actual number of students with hearing loss in tertiary institutions in New Zealand is difficult. In 2005, there were approximately 1050 enrolled DHI students at publicly funded tertiary institutions within New Zealand and registered with the institutions' disability support services (personal communications, 2008). Australian disclosure trends indicate a "stable 10% of disability disclosures being for the hearing category" (Brett, 2010, p.5) and if we apply the same assumption here, given that the two countries have similar demographic characteristics, then the actual figure for New Zealand may be in the vicinity of 2,000 tertiary students with some level of hearing loss.

The lack of accurate and comprehensive statistics only serves to highlight the need for further research in this area. Despite the current lack of statistics, it seems that the numbers of tertiary students who have significant hearing losses are likely to increase. If we follow UK trends, where currently nearly three quarters of DHI 18-29 year olds progress to tertiary education, compared to only 2% of the school leavers who did so fifty years earlier (Dye, Kyle, Allsop, Denmark, Dury, & Ladd, 2000), then the number of students who see tertiary study as a natural progression in their career path will increase. Therefore, there needs to be an attempt to gain professional insight into how to support and maximize the potential of DHI tertiary students in a way that is culturally, and academically appropriate.

Definitions

Before continuing, it is essential to define terminology used throughout this study. Some of these terms are found in other contexts, but here I will explain them as they refer to this study and its national context and policies.

Tertiary Education: In New Zealand, we refer to postsecondary or higher education as tertiary education, which includes universities, polytechnics, and vocational training.

Deaf vs. deaf: An upper case "D" is used to refer to Deaf people who have a culture and sign language that are distinctive, and identify with the Deaf community. The use of lower case "d" indicates a broader definition, referring for convenience to all degrees of hearing loss, which may include Deaf people who are members of the Deaf community and those who are hearing-impaired.

Hearing-impaired: This is the term used to refer to people who have a degree of hearing loss but who do not identify with the Deaf community. I acknowledge that the term *hard of hearing* is a culturally preferred term in many countries (Hyde, 2009), but in New Zealand, this term is not routinely used within the education system or the Deaf community itself. For this reason, I have adhered to the national status-quo and used the term *hearing-impaired*.

DHI: In New Zealand, this acronym is commonly used in public policy to refer to the combined Deaf and hearing-impaired population and will be used for convenience throughout the thesis, unless a distinction between the groups is required.

Hearing Loss Classifications: Hearing loss is measured across frequencies primarily concerned with speech from 250 to 4,000 Hertz (Hz), and intensity, from -10 to 120 decibels (dB). The higher the decibel value, the greater the hearing loss. For classification purposes, a pure-tone average of the better ear across the frequencies is used. The New Zealand Audiological Society, a national organisation providing

government-funded audiological services, classifies hearing loss into four levels, shown in Table 1 (New Zealand Audiological Society, 2004).

Table 1

Classification of Hearing Loss

Classification	Degree of hearing Loss
Mild	26-40 dB
Moderate	41-65 dB
Severe	66-95 dB
Profound	96+ dB

Sensorineural hearing loss: Sensorineural hearing loss is a result of damage to the inner ear, namely the cochlea or the auditory nerve, and to date is permanent and unable to be surgically treated. When this loss is moderate to profound, in other words greater than 40dB, present at birth, or develops prior to the age of three, children may struggle to acquire spoken language.

New Zealand Sign Language (NZSL): NZSL is the New Zealand Deaf community's indigenous language, and closely related to both British and Australian Sign Languages. NZSL is a visual socio-cultural language that uses hand movements combined with facial grammar, expression, and body posture to convey meaning. NZSL has its own unique grammar and vocabulary and was systematically analysed and described as a language in its own right by linguist Marianne Collins-Ahlgren (1989) in her PhD thesis. On the 6th April 2006, the New Zealand Parliament passed the third reading of the New Zealand Sign Language Bill. NZSL became the third official language of New Zealand, after English and Māori, by Royal assent on 10th April 2006.

Auslan: Auslan is the indigenous visual socio-cultural language of the Australian Deaf community and closely related to British and New Zealand Sign Languages. Auslan's grammar and vocabulary is quite distinct from spoken English. In 1991, the Australian government indirectly recognised Auslan as a community language, other than English, and the preferred language of the Australian Deaf community in a policy statement (Dawkins, 1991).

Signed English: Signed English is a manually coded system of communicating that follows English word order, typically used at the same time as speaking. In New Zealand, Australasian Signed English was introduced from Australia in the early 1980s with the advent of the *Total Communication* approach to teaching deaf children. 'TC,' as it was known, was based on the philosophy that by using spoken, signed, and written modes of communication with DHI children, their language, and cognitive development would be maximized. Signed English borrowed many of the vocabulary signs from Auslan but altered them to represent the morphology of English. In addition, educationalists invented new signs to represent grammatical aspects such as plurals, tense endings and other inflections.

Fingerspelling: Sometimes referred to as the 'manual alphabet,' fingerspelling is a method of representing letters of the alphabet on the hands. NZSL uses the two-handed version of the alphabet as do most British-related sign languages such as Auslan. Unlike their Australian counterparts, fingerspelling was very rarely used by the New Zealand Deaf community prior to the introduction of signed English into schools in the early 1980s (McKee, 2001).

Mainstreaming: In New Zealand, this refers to the educational placement of a student in a regular classroom in a regular educational institution. In the compulsory education sector (early childhood through high school), various levels of support are available for both the learner and the teaching staff. Support for DHI students is provided at a level

determined by the assessed needs of the student and available government funding. Support can include teacher aides, speech language therapists, resource itinerant teachers of the deaf (RTD) and advisors on deaf children (AODC).

Inclusion: In contrast to mainstreaming, inclusion refers to people being actively included and participating in activities of daily living, including education, from the outset. The NZ Ministry of Education defines inclusion in education as:

...valuing all students and staff. It involves supporting all children and young people to participate in the cultures, curricula, and communities of their local school. Barriers to learning and participation for all children, irrespective of their ethnicity, culture, disability or any other factor, are actively reduced, so that children feel a sense of belonging and community in their educational context. (Ministry of Education, 2009c)

Resource itinerant teacher of the deaf (RTD): Specialist teachers who have undergone specific training to work with DHI children and their teachers within the mainstream setting.

Advisors on deaf children (AODC): Employed by the NZ Ministry of Education, advisors work with children identified as having a hearing loss. Advisors work with children from time of diagnosis, provide support and advice to parents, audiologists, and teaching staff, and monitor DHI children's learning until they leave secondary school.

Disability Coordinators: Provision of, or access to, resources falls to each tertiary institution's disability support services and usually are the responsibility of the disability coordinators who have a pivotal role in the educational experiences of DHI students.

Sign Language Interpreters: A sign language interpreter facilitates communication between deaf and hearing people by translating from speech into sign language, and

sign language into speech. In New Zealand, there is currently one training programme for sign language interpreters, at Auckland University of Technology (AUT). Demand for interpreters has been growing steadily, and far outstrips supply, especially in tertiary education.

Notetakers: Notetakers provide a service that enables a student who is reliant on visual communication to concentrate on the lecturer or speaker while someone else takes the notes. Students with hearing loss find taking their own notes in a lecture or class situation extremely difficult. Some tertiary institutions provide dedicated paid notetakers and others rely on peer student's notes.

Electronic notetaker (ENT): Sometimes referred to as Speech-to-Text, this is a real-time transcription service. A variety of programmes are used, including C-Print and Stereotype. For students with good literacy, this form of notetaking can be particularly useful.

History of deaf education in New Zealand

The first New Zealand school for the deaf opened in Sumner, near Christchurch, in 1880. The Milan Congress, held in the same year, recommended that sign language in deaf education be abolished (McKee, 2001). Within many schools for the deaf prior to this conference, there were significant numbers of Deaf teachers who frequently conducted lessons in the indigenous sign language of the country (Ladd, 2002). After the Milan Congress, New Zealand, like many other countries, largely followed the oral philosophy, referred to as 'oralism,' which meant students were instructed using aural/oral communication methods. St Dominic's School for the Deaf, opened by the Dominican order in Wellington in 1944, later moved to Fielding in 1952. The Auckland School for the Deaf opened in Titarangi in 1952, and had a smaller linked school in Mt Wellington. In 1958, the New Zealand Education Department built a new

school at Kelston, and both the Titarangi and Mt Wellington schools closed. All three schools for the deaf were residential schools for children from the age of four. Some children did attend as day pupils, but mostly the students were boarders. The ultimate goal was to produce deaf students who could speak, therefore, children spent many hours focussed on speech lessons, often to the detriment of subject knowledge and literacy (Gardener, 2005; McKee, 2001). Throughout the 1960s, services for deaf children expanded to include an itinerant teacher of the deaf service (RTD) and advisors on deaf children (AODC). This change coincided with the introduction of deaf units, based in mainstream schools and staffed by teachers of the deaf.

By the mid 1970s, it was becoming increasingly apparent, both here and overseas, that an exclusively oral approach was not educationally appropriate, or successful, for a significant portion of severely and profoundly deaf students (Power & Leigh, 1998). Concerns held about deaf students' poor academic achievement levels prompted policy change, which saw 'Total Communication' being introduced into the New Zealand education system in 1979 (Ahlgren, 1986). New Zealand initially adopted the *Australian Signed English Dictionary*. Shortly afterwards, a joint New Zealand and Australian initiative developed and expanded this further to become the *Australasian Signed English Dictionary*. Teachers and parents thought that by simultaneously using visual signs to represent the morphology of spoken English, deaf students would develop better English proficiency, and improve their literacy levels (Ahlgren, 1986; McKee, 2001; Smith, 1994). These improved literacy levels would ultimately increase the students' chances of accessing further education, and enhance future employment options.

Many resources were developed, but eventually signed English as an instructional communication mode declined, primarily due to problems with concurrent production of signed and spoken English. If people presented spoken English at the normal rate,

then sign production would generally reduce to 'key signs.' That is, only the main words would be signed, leaving out inflectional morphemes or smaller words such as 'is,' 'to,' 'and' or 'at.' In order to match the pace of voice and hands, teachers tended to slow their rate of spoken English, or they used simpler English to suit their limited sign vocabulary (Hyde & Power, 1991). Power, Hyde and Leigh, in more recent research (2008), concluded that there might be some value in signed forms of English for specific language instruction, enhancing literacy, and negotiation of meaning in English language classes with more mature students.

During the late 1980s, there was an increasing awareness and acceptance that Deaf people had their own language. In 1992, a report to discuss the development of a New Zealand language policy, commissioned by the Ministry of Education, acknowledged that New Zealand Sign Language, (NZSL) was a complete visual-spatial language and a true community language in its own right (Waite, 1992). This raised the question as to whether there was a need for the continued use of an invented sign system as a teaching method (Smith, 1994). By the early 1990s, bilingual-bicultural programmes for deaf students were being developed overseas (Mahshie, 1995; Schirmer, 2000) and in 1995-6 Kelston Deaf Education Centre, Auckland, established its first bilingual-bicultural pilot class (Nuthall, 1997). Gradually this approach, implemented throughout the school, brought with it a change of philosophy and practice. Van Asch Deaf Education Centre in Christchurch, the only other remaining school for the deaf in New Zealand, had also initiated these changes by late 1997. While there is still some use of signed English in the education system today, it is no longer educational policy, as NZSL is preferred. Signed English however, did serve a purpose, which was to break the stranglehold of oralism, and pave the way for NZSL in the education of deaf students.

The use of NZSL in deaf education created a demand for new resources, skills, and personnel. One of the most obvious changes was the advent of Deaf teachers of the

deaf, Deaf sign language assistants and Deaf mentors working alongside hearing professionals in the compulsory education sector. The funding structures and service delivery options, however, have not developed sufficiently to meet the new demands (Manning, 2004).

In May 2001, Deaf Education Aotearoa New Zealand (DEANZ) was established as a charitable trust. Its goal was to promote the interests of DHI students in New Zealand, and it developed a number of initiatives, including an attempt at a national database to track DHI students. Unfortunately, it does not include tertiary students (DEANZ, 2005). Several New Zealand researchers raised this lack of information about DHI students in tertiary education as an issue requiring urgent attention over the last 15 years (Carr, 1994; Logan, 1995; Sameshima, 1999) and yet there is no database. It is an area that needs to be addressed urgently; the Ministry of Education has a responsibility to, at the very least, collate information about students who are accessing services already being supplied by tertiary institutions as part of their ongoing funding model.

This brief history of New Zealand deaf education outlines two quite different ‘models’ of instruction for DHI students. The first 100 years or so principally reflects a medical or communication deficit model that emphasizes the role of normal hearing in the development of literacy skills. The high reliance on a medical deficit model for the teaching of DHI students meant that teachers spent a significant amount of time focussed on what the student could not do, and reinforced the continuation of an oral language emphasis. Around the world, the medical model led to a high level of focus on speech, and meant that many students did not have the time required or the ability to access content knowledge. Instead, many hours were spent practicing oral/ aural skills with the ultimate goal being for the student to develop spoken language as a first language, and become as close to a ‘hearing’ person as possible (Ladd, 1994, 2002; Marschark, Lang & Albertini, 2002; McKee, 2001). Thus, the cognitive deficits

experienced by DHI students were not necessarily a lack of intelligence but rather represented ‘information deprivation.’

The emergence of bilingual-bicultural teaching models reflects a socio-cultural approach. This approach considers that Deaf people have a culture and language that is different from hearing people, and are a linguistic minority, for whom the acquisition of English skills can be seen as second-language learning. According to Schirmer (2000),

....the impetus for implementing bilingual-bicultural programs for students who are deaf comes from two sources: (1) The Deaf community, who advocate for the right to pass on their language and culture to succeeding generations; (2) the overall disappointing achievement of youngsters who are deaf. (p. 98)

New Zealand’s compulsory education statistics show an estimated 95% of DHI students now attend regular classes with support from a RTD and/or AODC. Their communication mode primarily is oral-aural with amplified residual hearing and speech reading. The remaining five percent of children are based in one of the two separate schools for the deaf (DEANZ, 2005). Children at these schools also have a higher access to NZSL as their main mode of communication (McKee & Smith, 2004; WEBResearch, 2003). Children are placed in either mainstream settings or a school for deaf, based on parent choice. Educational professionals do not make the placement decision and usually parents make choices for a range of reasons, such as language or social/cultural needs, or additional disability (B. Mulcahy, personal communication, 31 January 2011).

The figures above reflect the trend in many countries of moving away from special school and unit placements for deaf students, resulting from parental, community attitudes, and legislative changes over the past decade (Luckner & Stewart, 2003; Power

& Hyde, 2002). The model of inclusion adopted by the New Zealand Ministry of Education in their *Special Education in New Zealand: Statement of Intent* (1991) prompted these moves. There have also been changes in technology feeding into these increased mainstream placements. Since 2006, the New Zealand Government has funded Universal Newborn Hearing Screening (UNHS) that has the goal of identifying hearing loss at an early age. Early detection of a child's hearing loss increases access to timely and appropriate early intervention. Combine this with technological advances of hearing aids and the high use of cochlear implants (N. Heslop, personal communication, 10 February, 2009) mean that more profoundly deaf children may be functioning like a child with a moderate/severe loss, therefore, more able to 'fit in' to mainstream hearing classes (Mayer, Miller & Cocks, 2009). Although many people and groups applaud the right of children with disabilities to attend their local school, Deaf groups have mixed feelings about the success of such moves for deaf children (Ladd, 1994, 2002; McKee, 2001; Padden & Humphries, 1988, 2006). These groups believe that DHI students can be socially and linguistically isolated in environments where they are the only DHI person, as even with the best technology available, deaf children can never be hearing children.

Significance of the study to contemporary New Zealand policy and practice

"Inclusion is the philosophy that all people have the right to be included with their peers in age-appropriate activities throughout life" (Miller & Schleien, 2006, p.11). The goal of educational inclusion, according to Stainback, Stainback, East, and Sappoun-Shevin (1994) is, "not to erase differences, but to enable all students to belong within an educational community that validates and values their individuality" (p.489). Children in compulsory education in New Zealand have their rights to inclusion protected by the Education Act (1989), which gives children the right to be educated in their

neighbourhood school, and is protected further under the Human Rights Act (1993).

The New Zealand Education Act deemed that all children were:

Entitled to free enrolment and free education at any state school during the period beginning on the person's fifth birthday and ending on the first day of January after the person's 19th birthday. (Education Act, 1989, Section 8)

At the same time, the Special Education Service (SES), later Group Special Education (GSE) was developed as an independent Crown Agency that would provide advice, guidance and support that would benefit people under the age of 21 with difficulties in learning and development. The Ministry of Education introduced the *Special Education in New Zealand: Statement of Intent* in 1991. Its main thrust was to decentralize special education services. In 1996, the Ministry released *Special Education 2000* as a framework that would satisfy a "continuum of need" of a diverse range of students. In order to meet these legal obligations, DHI students in compulsory education have access to the services of itinerant teachers, advisors of the deaf, teacher aide support, and specific funding. They also have the right to assistive auditory devices such as personal frequency modulated systems (FM System) and hearing aids provided by the government, until the age of 21.

Throughout this legislative and policy development, no mention was made of tertiary students with disabilities. New Zealand does not have any specific anti-discrimination laws, therefore, tertiary institutions' legislative obligations to address the needs of students with disabilities fall under the *Human Rights Act 1993* and the *Education Amendment Act 1990*. The resources available to DHI tertiary students in New Zealand to support their inclusion are limited in comparison to those available in compulsory years of schooling. Therefore, many DHI tertiary students have not been able to participate to the extent that their hearing peers are entitled. It is not clear why the New

Zealand Government accepts the responsibility of policy development and implementation, as well as providing funding and resources to promote the inclusion of DHI students at the compulsory education level, and yet chooses not to maintain these resources to the same degree in tertiary education. There is no resource teacher or advisory service, and there is no automatic right to assistive auditory devices. Instead, the responsibility for providing resources and funding for the DHI students passes to the tertiary institution, or to the student themselves.

Since 1998, New Zealand tertiary institutions have received a Special Supplementary Grant (SSG) for Tertiary Students with Disabilities (TSD). The SSG made it possible for tertiary institutions to provide essential resources and technological assistance for students with disabilities. This funding package was designed to cater for a small portion of tertiary students who have high cost service needs. The grants were intended to (a) improve the access of students with disabilities to educational opportunities at tertiary institutions, (b) increase the level of enrolment of students with disabilities in tertiary institutions, (c) improve the levels of educational achievement by students with disabilities, and (d) increase the accountability of tertiary institutions for their support of students with disabilities, consistent with their obligations under the Human Rights Act 1993 and the Education Act 1989 (Tertiary Education Commission, 2005b).

While students have entitlements to "reasonable accommodation" protected under the Human Rights Act 1993, there are exceptions to providing these if the tertiary institution can prove unreasonable disruption, undue hardship, or a risk to health and safety. What tertiary institutions deem reasonable will depend on the individual circumstances. DHI students often require ongoing and high-cost supports such as, sign language interpreters and/or notetakers, one-to-one tutoring and other resources. Institutions have been known to refuse access to those students they believe will have

these continuing high cost support needs (various disability coordinators, personal communications, 2009).

Two key documents released in the last few years support the goal of New Zealand becoming a more inclusive society, including equal access to all levels of education. The first of these was the *NZ Disability Strategy – Making a World of Difference* (NZ Ministry of Health, 2001). The aim of the *NZ Disability Strategy* was to eliminate barriers that people with a long-term impairment might encounter doing things that most New Zealanders take for granted. The barriers identified ranged from the purely physical, such as access to buildings, through to attitudinal barriers due to poor understanding of disability issues.

Disability is the process which happens when one group of people create barriers by designing a world only for their way of living, taking no account of the impairments other people have. (Ministry of Health, 2001, p. 1)

The *NZ Disability Strategy* (2001) was the first government document that explicitly identified barriers to participation and achievement for people with impairments. It contains objectives and actions that are relevant to all tertiary education providers. To comply with their own charters, tertiary institutions are required to address the objectives most relevant to this particular population:

Objective 3:

Provide the best education for people with impairments.

Action:

3.8 - Improve post-compulsory education options for people with impairments, including: promoting best practice, providing career guidance,

increasing lifelong opportunities for learning and better aligning financial support with education opportunities. (2001, p.16)

Objective 4:

Provide opportunities in employment and economic development for people with impairments.

Action:

4.1 - Provide education and training opportunities to increase the individual capacity of people with impairments to move into employment. (2001, p. 17)

The government believed, when it later released the *Tertiary Education Strategy 2002-07* (New Zealand Ministry of Education, 2002) that providers, communities, and government agencies would work collaboratively to achieve the vision outlined in the Disability Strategy. As a means of assisting tertiary institutions to implement the Disability Strategy objectives, ACHIEVE (The National Post-Secondary Education Disability Network Incorporated) initiated and developed, *Kia-Orite Achieving Equity: New Zealand Code of Practice for an Inclusive Tertiary Education Environment for Students with Impairments* in 2004. The Ministry of Education and the Ministry for Disability Issues endorsed the *Code* as a guideline document. While the *Code* is not a legal document to be complied with, it is however, required practice if tertiary institutions are going to meet their own equity policies, and their statutory obligations under the *Tertiary Education Strategy 2002-2007*. The policy of inclusion embraced in the compulsory years of schooling should be an ongoing objective in tertiary education. These two documents affirm the responsibility for equity in education to be squarely with each tertiary institution.

In September 2008, the New Zealand Government signed and ratified the United Nations Convention on the Rights of Persons with Disabilities. Article 24 of the

Convention makes mandatory the issues of access and participation in education at all levels. Issues regarding deafness are reflected in most Articles but are specifically described in Article 24 (Education) which is located in Appendix E. Article 24 (5) particularly focuses on postsecondary requirements and clearly identifies the rights of access and participation and the provision of reasonable accommodation.

5. States Parties shall ensure that persons with disabilities are able to access general tertiary education, vocational training, adult education, and lifelong learning without discrimination and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.

New Zealand laws implicitly require equal access to tertiary education for students with disabilities and aim to prevent discrimination in terms of financial assistance and physical access. So, while the law has increased the responsibility of New Zealand's tertiary institutions, and appropriate accommodations are being made available, there continues to be concern regarding DHI students' participation, persistence and completion at this level of education (Logan, 1995; Sameshima, 1999). Accessibility, it seems, has not guaranteed graduation. Therefore, given the current state of tertiary education for DHI students in New Zealand, the question is what can be done to ensure the education they are receiving is as inclusive as possible? Perhaps direction could be taken by following the model adopted for Māori learners, designed specifically to address Māori needs and aspirations in the tertiary education sector. In June 2004, the Tertiary Education Commission (TEC) released *Working with Māori 2004-07* in response to two of the objectives in the *Tertiary Education Strategy 2002-2007*. The goals can be reduced to three broad aims:

- Assisting Māori learners to succeed in education;

- Encouraging education providers to be responsive to Māori aspirations and needs;
- Ensuring the education system has the capacity to be inclusive of Māori.

(New Zealand Tertiary Education Commission, 2005a)

Clearly, being responsive to DHI students' aspirations and needs, and ensuring the tertiary education system has the capacity to be fully inclusive for DHI students, is a step in the right direction.

Conclusion

In conclusion, while the number of DHI students in tertiary settings would seem to have increased, there has not been universal adoption among tertiary institutions of the principles and recommendations of New Zealand legislation and government strategy concerning the inclusion of people with disabilities. Nor has there been evidence of full compliance with the ratified provisions of the *UN Convention on the Rights of Persons with Disabilities* (2006). Additionally, there is a lack of research that documents the experiences of DHI tertiary students. The most notable, is the lack of New Zealand research about academic outcomes, student expectations, the availability and use of accommodations, and the demographic characteristics of these students.

The purpose of this study was to gain insight and understanding of the learning and social participation experiences of this population that could benefit both the students and the professionals who work with them. Because of the scarcity of empirical New Zealand studies in this area, specific hypotheses were not formulated. The study posed the following research questions:

1. What are DHI students' experiences in relation to their social and academic participation in tertiary education in New Zealand?

2. What barriers do DHI students perceive they face when accessing academic and social participation within the New Zealand tertiary education environment?
3. What solutions are current DHI students utilising to overcome these barriers, and further, what other solutions might there be?

The insights gained may lead to greater compliance with national and international obligations regarding the inclusion of DHI students in tertiary education. Further, this research has the capacity to inform the implementation of public policy, so that what we do in practice, complies with what is required within current New Zealand legislation and policy.

Overview of thesis

This chapter has given a brief overview of the research project, provided a history of deaf education in New Zealand, outlined the key research questions, and identified the significance of this study to current New Zealand policy and practice in tertiary education institutions.

Chapter Two reviews the literature relevant to DHI students undertaking tertiary study. As there has been little in the way of New Zealand research in this area, most of the review will embrace international studies and explores the roles of career decision-making, transition to tertiary study, advantages of gaining a tertiary education, persistence with academic study, and the use of academic and social supports for learning and tertiary education participation. It concludes with a section outlining previous empirical research in New Zealand and the contribution of the present study.

Chapter Three provides an overview of the research design and includes an explanation and justification of the mixed method approach. It describes the processes of participant recruitment, ethical clearances, data collection and analytical processes used for all phases of the study.

Chapters Four and Five contain the demographic characteristics of the participants, presentation of results and discussion of the quantitative and qualitative data.

The final chapter draws together the quantitative and qualitative data by identifying the key findings of the study in the context of the literature. Implications for practice and policy are discussed, as are the limitations of the study, and suggested directions for future research.

CHAPTER TWO - ISSUES SURROUNDING DEAF STUDENTS IN TERTIARY EDUCATION

Introduction

The aim of this chapter is to provide an overview of previous research relevant to the topic of DHI students undertaking tertiary education study. As there has been limited research into these issues with New Zealand populations, this review will mostly embrace international studies, which have reported such aspects as career decision-making, transition to tertiary environments, academic, emotional, and social adjustment, and accommodations and support required while studying.

Current programmes available and implications for DHI students

Most research in this area has been conducted in U.S. institutions with larger and often concentrated populations of DHI students, such as Gallaudet University, California State University and the National Technical Institute for the Deaf (De Filippo, 2004; Foster, Long & Snell, 1999; Schroedel & Geyer, 2000). One researcher in particular, Foster, studied mainstreamed DHI college students for nearly three decades in an attempt to improve outcomes for this population (Brown & Foster, 1991; Elliot, Foster & Stinson, 2002; Foster, 1987, 1998; Foster, Long, Ferrari & Snell, 2004; Foster & Mudgett-DeCaro, 1991; Foster & Walter, 1992). The majority of Foster's research involved students who attend the National Technical Institute for the Deaf (NTID), based at Rochester Institute of Technology (RIT) in New York State. There are approximately 1,100 DHI students attending this institution at any one time and they design study and support programmes specifically to accommodate DHI students' needs. This situation is decidedly different from that of New Zealand where most tertiary institutions report fewer than 10 Deaf students and fewer than 30 hearing-

impaired students attending, and experiences are, therefore, substantially different in terms of the social and academic interactions available for DHI students (New Zealand disability coordinators, personal communications, March, 2005).

This phenomenon of a few DHI students in each New Zealand tertiary institution mirrors New Zealand's compulsory education statistics. Most DHI children now attend their local school alongside their hearing peers (Statistics New Zealand, 2008). The percentages mainstreamed are slightly higher than in the United Kingdom or the USA, but similar to the Australian data that cite figures of about 84% (Hyde & Power, 2004; Power & Hyde, 2002). The high percentage of children attending their local schools reflects the trend of moving away from special school and unit or special class placements for DHI children, resulting from attitudinal and legislative changes towards inclusion over the last decade (Ballard, 1999; Kearney & Kane, 2006; Luckner & Stewart, 2003; McKee & Smith, 2004).

Inclusion

At this point, it is essential to revisit the definition of the word *inclusion*. Inclusion is a concept that is frequently used interchangeably with the earlier concepts of mainstreaming and integration. Hyde (2010) provides a valuable understanding of distinctions between these three concepts stating:

Mainstreaming was essentially focused on the 'place' of the child with a disability....While *integration* implies that persons with a disability could be integrated into all elements of mainstream society....*Inclusion*, by contrast, assumes that a just state of affairs is one in which people with a disability or another form of human difference should be included in society

from the outset, and in education in particular. (Hyde, Carpenter & Conway, 2010, p.7)

Similarly, Komesaroff and McLean (2006, p. 88), state “the presence of deaf students in regular classrooms must be underpinned by transformative practices that go beyond ‘simple inclusion’”. Powers (2002) defined inclusion as being a response to student diversity based on the principle of equity, in which students are valued and fully participating members of their educational community. Thus, students have the right to achieve as much as they can academically, physically and socio-emotionally, meaning inclusion is not a state to be achieved, but rather a process of change within which the education system operates. Various historical and cultural traditions, policy frameworks, and economic priorities within which an education system operates influence how the concept of inclusion is interpreted. Consequently, finding the right balance between the “provision of high levels of differentiation of services and support to meet the needs of individuals, and the degree of uniformity across an educational community maintained to ensure that the rights of all are preserved” (Hyde, 2010, p.312) is an ongoing challenge. I use this theoretical model for inclusion to evaluate the position of New Zealand tertiary institutions later in the discussion.

Transitioning from compulsory schooling to tertiary education

With mainstreaming becoming the norm for most DHI students in compulsory education settings, the obvious expectation of these students and their families is that they should be able to access and participate in tertiary education opportunities, in the same way as their hearing peers. Transitioning from high school to tertiary education is particularly difficult for students with disabilities, with many students leaving high school without the self-advocacy skills they need to survive in tertiary education (Eckes

& Ochoa, 2005; Fiedler & Dannekerer, 2007; Madaus, 2005). Several studies have emphasised the need for transition programmes specifically aimed at DHI students due to the unique needs these students have prior to starting their tertiary studies (Bonds, 2003; Furlonger, 1998; Garay, 2003; Kolvitz & Wilcox, 2002; Loera, 1998; Punch, Creed & Hyde, 2005; Punch, Hyde & Creed, 2004).

Within these programmes, the exploration of potential careers and adequate career planning, prior to transitioning to tertiary education, is vital to minimize the cycle of unemployment and underemployment, which has been the situation for many deaf people. (Schildroth, Rawlings, & Allen, 1991; Schroedel & Geyer, 2000; Welsh & MacLeod-Gallinger, 1992). The literature describes the difficulties many DHI students experience with development of career maturity, making career choices based on their limited knowledge of occupations, and perceptions of barriers related to their hearing loss (Danermark, Antonson & Lundstrom, 2001; Furlonger, 1998; King, 1990; Punch, Creed, & Hyde, 2005; Schroedel, 1991, 1992). Punch and Hyde, in an Australian study (2005), shed light on students' social self-concepts, and the way in which these interacted with their career aspirations and thoughts about occupational futures. These authors suggest that a loss of confidence in social interactions may have transferred to the students' career decision making. Further, Stinson and Walter (1997) suggested that strong career decision-making skills were likely to reduce the rate of non-completion of university degrees among this population.

In their more recent study Punch, Creed and Hyde (2006), identified that DHI young people prematurely circumscribed their career options based on their beliefs about what occupations they would be able to undertake. These researchers concluded that knowing one's own personal preferences, combined with an awareness of strategies helpful in overcoming some of the social and communication consequences of impaired

hearing, allows a student to have greater control over their actions and outcomes, and ultimately make more realistic career choices.

The attitudes of others

The various attitudes of teachers, parents and the Deaf community towards suitable employment options for DHI students have been the focus of studies in Israel, India, and the United States (Hurwitz, Weisel, Parnasis, DeCaro, & Savir, 1997; Parnasis, DeCaro, & Raman, 1996; Parnasis, Samar, & Mandke, 1996; Weisel, 1998). Even though the countries in which the studies were undertaken were diverse, the results were relatively consistent regarding the advice provided to DHI students about the suitability of various occupations. In general, the advice given by teachers and parents was not as encouraging across a range of occupations as it was for hearing students, with the same levels of academic ability. The difficulties perceived by parents or teachers included the levels of communication required, and the ability for the person and their co-workers to remain safe in the workplace. In other words, occupations that did not depend on interpersonal communication were favoured. Komesaroff (1996) concludes that low expectations also arise from teacher and parental disappointment in the school education results of DHI children. Deaf community leaders, on the other hand, tended to be consistently more positive in their advice to DHI students than teachers or parents (DeCaro, Mudgett-DeCaro & Dowaliby, 2001).

With the high rate of mainstreaming in New Zealand, very few DHI children at school have contact with, or advice from, Deaf adults (Buzzard & Nicholson, 2006; Fogarty, 2006; Laing, 2006; McKee, 2006). Recently, the Deaf Mentor or Deaf Resource Person services that were provided by Van Asch Deaf Education Centre throughout the southern part of New Zealand and consisted of Deaf adults visiting and liaising with DHI students, their teachers and families, was discontinued due to lack of

funds (Lewis, 2010). Deaf professionals and commentators have highlighted the value of connecting hearing parents and their DHI children with Deaf role models over a long period, a view supported by educational and sociolinguistic research (Grosjean, 1998; Holcomb, 1997; Johnson, Liddell & Erting, 1989; Martin & Lytle, 2000; McKee, 2005; McKee & Biederman, 2003). The loss of Deaf role models in the educational environment has the potential to further impact on personal development and the choices made by students about future career options.

Advantages of gaining a postsecondary education

Obtaining tertiary qualifications increases DHI people's likelihood of gainful employment and produces greater earning potential (Clarq & Walter, 1998; Jones, 2004; Welsh & Foster, 1991). Previous findings consistently show that DHI people are under represented in managerial and professional occupations, and are over represented in blue-collar occupations (Hyde & Muspratt, 1998; Hyde & Power, 1992; Luckner, Muir, Howell, Sebald & Young, 2005; Marschark, 1997; Power & Leigh, 2004; Schildroth, Rawlings, & Allen, 1991). Studies have also revealed a lack of career options and flexibility, (MacLeod-Gallinger 1992a, 1992b; Welsh & MacLeod-Gallinger, 1992). In general, research has indicated that many DHI people are not reaching their full potential, either academically or professionally. In today's economy, many jobs such as process or labouring work are disappearing, and employers want employees who have proficiency in, reading, mathematics, computer literacy and problem solving (Luckner, 2002). A recent Australian study investigated the education and employment outcomes of sign language users living in Victoria, Australia (Willoughby, 2011). Findings identified that sign language users were approaching parity with the general population in terms of educational attainment, particularly within

the younger age groups, but a gap remained in employment and particularly income levels.

DHI people with tertiary qualifications have higher income potential and career accomplishments, and are on par with the salaries and occupations of hearing adults with similar qualifications. Therefore, it follows that DHI people are able to maximise both their ability and potential by obtaining tertiary education qualifications (Clarcq & Walter, 1998; Jones, 2004; MacLeod-Gallinger, 1992a, 1992b; Schroedel & Geyer, 2000; Welsh & Foster, 1991; Welsh & MacLeod-Gallinger, 1992).

A longitudinal study undertaken at NITD identified the economic benefits of a tertiary education for DHI people. In that study, the long term academic and employment outcomes for DHI students were used to evaluate the life-long impact of a tertiary education on economic outcomes. Findings demonstrated that a tertiary education could increase this population's earnings and reduce the amount of time spent on disability related income support programmes (Weathers, Walter, Schley, Hennessey, Hemmeter & Burkhauser, 2007). A further study identified the significant incremental benefit on earnings for graduates, compared to non-graduates. People between the ages of 25 and 50 with a bachelor's degree earned 66% more, and those with sub-bachelor qualifications earned 34% more than those people who failed to graduate or never attempted tertiary education (Schley, Walter, Weathers, Hemmeter, Hennessey, & Burkhauser, 2011).

Persistence in tertiary education

Once students have focussed on an academic path, the issue of persistence in their programme of study is crucial to consider for both disabled and non-disabled students. Tertiary education staff members are then able to maximise student retention and ultimately increase successful programme completion (Krause, Hartley, James &

McInnis, 2005; Kuh, 2001). Tinto (1987, 1993) presented a theoretical model of student withdrawal from college, and considered persistence was primarily based on the quality of students' interactions with the academic and social systems of the institution. In the USA, non-completion rates for students average 58% for two-year colleges, and 30% for four-year colleges (Tinto, 1987). Rawlings, Karchmer, and DeCaro (1988) estimated the non-completion rates for DHI students as, 66% for two-year colleges, and 72% for four-year colleges and researchers have asked many questions about the acceptability of this much higher withdrawal rate (Eilers-Crandall, 2006; Myers & Taylor, 2000; Walter, Foster & Elliot, 1987).

Hyde, Punch, Power, Hartley, Neale and Brennan (2009), found that the overall degree completion rate for DHI students at Griffith University in Australia, which has designated support services for DHI students, was 70%. The learning support programme at Griffith was established with a national focus, and consequently its performance is more comparable with specialist US institutions and programmes, such as, Gallaudet University, and the National Technical Institute for the Deaf. Data forms may vary somewhat, but these institutions report overall undergraduate graduation rates as being 52% for NTID and 40% for Gallaudet (Hyde *et al.* 2009). Marschark (2007) observed that "one would assume that enhanced communication, a broad array of support services, and instructors experienced in teaching deaf students are primary factors" (p.149) when observing the differences between DHI students' graduation rates from mainstream versus separate programmes.

While seeking to understand possible reasons for non-completion, researchers have explored a variety of factors. In the general population, research indicates that students are more likely to continue their higher education if they are engaged with their studies and have developed relationships and networks with other students (Crosling, Thomas & Heagney, 2007; Lowe & Cook, 2003). Similarly, Astin (1993) built on his earlier

research on access and persistence and his theory of participation from the mid 1970s and analysed environmental influences on student development. His findings suggest that factors contributing to persistence linked positively to increased involvement in the total college experience, specifically being integrated socially and academically.

While laws in the USA and elsewhere promoting access to higher education for disadvantaged groups have increased the requirements of tertiary institutions to be more inclusive and make appropriate accommodations, there continues to be concern regarding DHI students' engagement and persistence at this level (Boutin, 2008). Two studies undertaken at NTID (Stinson, Scherer & Walter, 1987; Stinson & Walter, 1997) had relatively large numbers of participants, with 233 and 243 students respectively. These quantitative studies used a modified and simplified version of Tinto's model of withdrawal and persistence to fit the NTID/RIT context. Modifications included the addition of three new variables reflecting communication style and skills, mainstreaming, and distance from home. These two studies indicated that the risk of leaving college beyond the first year was minimized if students had goals and commitment, and had some experience of mainstream schooling prior to tertiary study. It was also important that students were satisfied and integrated, both academically and socially, and were succeeding in their studies.

In an earlier study, Scherer and Walter (1988, cited in Lang, 2002), interviewed 320 deaf students who were either withdrawing from higher education or transferring to another institution. These students reported that the inability to make up their minds about what they would choose as a major area of study was a notable factor in their persistence. In conclusion, the researchers held that Tinto's model seemed to be applicable to studies of DHI students. They recommended that to improve completion rates there needed to be early identification of the difficulties faced by this group of students. Additionally, for those students experiencing difficulty, early and appropriate

interventions such as facilitation of social adjustment, time management skills, tutoring and remedial instruction was required, as was assisting staff to teach in a more inclusive manner.

Social and academic integration

Lehmann, Davis and Laurin, (2000) identified the social inclusion of students with disabilities as an important factor in persistence; feeling part of the tertiary environment contributes to students' sense of belonging and identity. A major reason for leaving tertiary education is a lack of social adjustment. Tinto (1993) described student departures this way:

Rather than mirroring academic difficulties, they reflect the character of the individual's social and intellectual experiences within the institution following entry. Specifically, they mirror the degree to which those experiences serve to integrate individuals into the social and intellectual life of the institution. Generally, the more integrative those experiences are, that is, the more they are seen as satisfying and leading to integration into the life of the college, the more likely are individuals to persist until degree completion. Conversely, the less integrative they are, the more likely are individuals to withdraw voluntarily prior to degree completion. (p. 53)

On the issue of social integration, research with tertiary students has shown that DHI students do not feel part of the "university family" as much as their hearing peers do (Foster, Long & Snell, 1999; Komesaroff, 2005). In addition, "...social integration is even more difficult to achieve than academic integration since the former is less amenable to formal intervention and support services" (Foster & Walter, 1992, p.36). Stinson and Walter (1997) concluded that a sense of social and academic integration

was often missing for students with hearing loss and that once they were provided with support services, tutors and lecturers thought students were on the same level as their hearing peers. They went on to say:

Consideration is rarely given to the fact that the student is being deprived of access to the full spectrum of life on the college campus. Such isolation, or lack of integration into the educational community, may be an important cause of attrition among deaf persons attending college. This point especially relates to the access students have to the social life of the institution. (p.22)

Interestingly, while first-year DHI students are more likely to persist with their education if they have high overall social satisfaction, too many social activities may be detrimental. Stinson *et al.* (1987) found persistence to be less likely for DHI students who participated in a large number of social activities.

Foster and Elliot (1987) reported that 'difficulties with communication' was the main reason given by students for withdrawing from mainstream universities and transferring to NTID. In another study (Danermark, 1995), students reported that strong communication skills were critical within mainstreamed colleges, fostering successful social and academic interactions that encourage participation and engagement. Additionally, the level of comfort a person has using various communication modes appeared to matter. Murphy and Newlon (1987), investigated loneliness among DHI students who had chosen to attend regular higher education programmes. Students, who indicated that they were comfortable using speech, reported fewer feelings of loneliness, than those less comfortable using speech. Similarly, those Deaf students who were comfortable using sign language had fewer feelings of loneliness than those less comfortable using sign language.

Kersting (1997) used in-depth, open-ended interviews with 10 DHI students who had little or no previous experience with Deaf culture or sign language prior to arrival at a mainstream college environment. These students reported considerable feelings of isolation, loneliness, and resentment, especially during their first year of tertiary education. These students attended regular classes with hearing peers and used support services such as interpreters, notetakers, and tutoring. Communication and attitudinal barriers often hamper meaningful relationships and interactions between deaf and hearing groups. Kersting's research identified that this group of DHI students, who had a strong oral/aural communication focus, had barriers not only between themselves and their hearing community, but also between themselves and the Deaf student community. Their lack of sign language ability proved to be one of the major obstacles to relationships with Deaf students. This sense of alienation, from both their Deaf and hearing peers, continued through until the students' second and third years of study and only improved once they learned sign language enabling better communication with their Deaf peers. Hyde *et al.* (2009) reported a somewhat similar experience at an Australian university with a designated DHI student support programme. Of the 72 DHI students and graduates who completed a survey, many reported social isolation in their largely hearing peer groups. Others reported that they enjoyed the experience of mixing with other DHI people, often for the first time, and of learning sign language. The ability to converse and interact comfortably with other students encourages feelings of 'belonging' and seems to increase the likelihood that students will persist in their course of study.

De Filippo (2004) surveyed and interviewed 177 students enrolled at NTID and conducted focus groups with 23 of those students. Her research examined "quality of life" issues for DHI students in tertiary education, and concluded that if students made "positive and lasting connections to the campus environment... students will perceive

their quality of life on campus as satisfying” (p.21), and this may ultimately enhance their persistence and academic success.

Bills *et al.* (1998) used both qualitative and quantitative methods to examine students’ sense of belonging, access to information, and their engagement in learning. They explored the experiences of 46 DHI students, 30 hearing students, and their instructors at RIT, and identified several categories of barriers to access that DHI students often experience in mainstream educational settings. These included problems caused by the design of the teaching environment, teaching styles that made it difficult for the DHI student to participate, instructor attitudes or institutional policies that impeded student access to the curriculum and finally, actions of the individual student that impede their own progress.

In another study, 78 students undertook a self-administered survey that investigated self-esteem and coping strategies at California State University, which has the second largest mainstreamed DHI student population in the United States. Self-esteem is often linked to a sense of belonging to a group; additionally having good self-esteem protects people from daily setbacks, failure, or rejection (Jambor & Elliot, 2005). Results from several other studies have indicated, that students with a greater degree of hearing loss, and with skills that enable them to function in both hearing and Deaf contexts, generally have higher self-esteem and greater resilience, than those who are only able to function in either a hearing or a Deaf context (Bat-Chava, 2000; Rogers, Muir & Raimonde Evenson, 2003; Weisel & Kamara, 2005). This may be especially relevant if there are only a few DHI students on campus, with possibly limited social grouping and availability of interaction with other DHI students, as is the case in most New Zealand tertiary education institutions.

Appropriate academic and social supports

A number of studies have indicated that in order to succeed at the tertiary level, DHI students must have access to appropriate supports for both their academic and social needs. It typically falls to students to gain access to the accommodations that they need to succeed upon entering tertiary education, unlike the compulsory school system, where teachers and parents generally initiate appropriate accommodations (Cawthon, 2006; Cawthon, Nichols & Collier, 2008; Lang, 2002; Luckner, 2002; Menchel, 1998). Further, many staff within tertiary institutions assume that providing notetakers, tutors and interpreters are all that is necessary for students to achieve 'equity.' Although these supports undoubtedly help, assuming that the ultimate responsibility lies with the support services, and that teaching staff are not required to consider how they can make their teaching more equitable, is a valid concern (Bills, *et al.* 1998; Stinson & Walter, 1997). Foster, Long and Snell reported that, "[Instructors] generally indicated that they made few if any modifications for deaf students and saw support service faculty as responsible for the success or failure of these students" (1999, p. 225).

Many DHI students are not adequately prepared for tertiary education and have, on average, lower academic achievement and tertiary entry levels than hearing students. The importance of having adequate preparation for tertiary education was highlighted in a recent study by Convertino, Marschark, Sapere, Sarchet and Zupan (2009), who identified, "Success for DHH students at the college level clearly depends on their how well prepared they are when they walk in the door" (p.336). Richardson, MacLeod-Gallinger, McKee and Long (2000) compared the responses of 149 deaf students and 121 hearing students using a shortened version of the Approaches to Studying Inventory. They found that the impact of deafness on approaches to studying was minimal. Deaf students appeared to be just as capable as hearing students did when understanding the underlying message of materials to be learned. On closer analysis

however, “deaf students found it more difficult to relate ideas on different topics and that this was more marked in those who preferred to communicate using sign” (p.156).

Holcomb and Coryell (1992) suggested that many DHI students start their tertiary career with developmental gaps. These gaps are often the result of insufficient access to information via incidental learning, and represent missed opportunities for academic, personal, and social growth. Recently, Borgna, Convertino, Marschark, Morrison, and Rizzolo (2011) identified that “Differences between DHH and hearing students may indicate the need for explicit instruction for DHH students in academically relevant skills acquired incidentally by hearing students” (p.79). Consequently, the personal and social requirements of DHI students, as well as academic skills need to be identified and addressed specifically.

English (1993) investigated use of support services and how this related to DHI students’ levels of academic and social integration. Sixty DHI college students from mainstream universities completed a 48-item questionnaire. Findings suggested that, the focus of support services should expand to facilitate integration into the social system, as well as the academic systems of an institution, in order to address the high attrition rate of students with hearing loss.

Other identified factors such as proficiency in English and correctly anticipating the demands of college life are significant (Stinson & Walter, 1997). Gallaudet University reported that a large majority of their DHI students did not read well enough to make effective use of first-year textbooks (Marschark, Lang & Albertini, 2002). Smith-Pethybridge (2008), reported that less than one-quarter (23.3%) of the participants in her study had literacy skills at a level where they would be eligible for college level English courses. Further, Cuculick and Kelly (2003) found that only 17% of the first- year DHI students at NTID in 2001/2002 had the requisite reading and English skills to enter a degree level programme and reinforce this concern.

More recently, Richardson, Marschark, Sarchet, and Sapere (2010) explored the experiences of 89 students enrolled in mainstream programmes at RIT versus 128 students in separate programmes at NTID using, the Course Experience Questionnaire, the Revised Approaches to Studying Inventory, and the Classroom Participation Questionnaire. They concluded that many DHI students do not leave higher education with the same level of knowledge as their hearing peers, even though they may hold the same qualification.

DHH [Deaf and hard of hearing] college students generally come into and leave the mainstream classroom with less content knowledge than their hearing peers; ... gain scores (post-lecture test minus pre-test) indicate that DHH students learn less in that setting than their hearing peers; ... instruction via sign language generally does not lead to better performance than the same information communicated via text, and, when there are differences, it is text that shows an advantage. (p.358)

Foster, Long, and Snell (1999) explored the experiences of DHI students in mainstream classes at Rochester Institute of Technology (RIT) and concluded that interventions must be specific, easily achieved, and involve changes in behaviour on the part of the students and instructors. Findings identified that many instructors were reluctant to undertake professional development that identified ways to make learning more accessible to DHI students, as they believed there were few DHI students in their classes to accommodate. These researchers promote the conclusion, that instructional practices that enhance learning for DHI students actually enhance learning for everyone. They state that moving the focus away from accommodations required for DHI students towards best practice for all students, means the achievement of the goal of full inclusion for DHI students becomes more probable.

The most common types of academic support services provided to DHI students include notetaking, tutoring, and interpreting (Lang, 2002). Lang further identified that many DHI students receive information via a third party, with little direct communication. “Rather, information is received by the student through interpreting and/or real time captioning during class sessions, or through tutoring and/or notes...outside of class” (p.270). Knuckey and Cumpston Bird (2001), encapsulate the noteworthy issue relating to students who use interpreters, as well as the individual characteristics of the interpreters themselves, in this way:

Educating a Deaf person in a hearing context via an interpreter is unique. In no other educational setting are the concepts and the language of instruction, as well as classroom interaction, filtered through a third party who may or may not be familiar with the subject matter. (p.24)

Marschark, Sapere, Convertino and Seewagen (2005) in a study of sign language interpreting for DHI students, found contrary to popular claims, that even Deaf students of Deaf parents with ASL as their first language with access to experienced interpreters, who were familiar with the students, did not gain as much information as their hearing peers. A small Australian study (Napier & Barker, 2004) involved four DHI university students in a panel discussion to gain their views of interpreting in lectures. These students estimated that the amount of lecture material that they received and understood through an interpreter ranged between 50%-90%. These findings indicate that for DHI students in the tertiary environment, merely providing an interpreter is not enough to provide them with educational equality, even with a perceived access to ongoing communication.

The complexity of lecture information and related lexical and cognitive intricacies are a challenge for interpreters working at this level. Researchers suggest that the

accuracy and effectiveness of interpreting at the tertiary level may depend on the interpreter's familiarity with the subject material, their ability to code-switch between free and literal interpretation as determined by the content of the message and the needs of the student, and their own level of education (Lang, 2002; Locker, 1990; Napier, 2001). Until recently, most research examined the process of interpreting itself (Jones, Clark & Stolz 1997; Napier, 2004a; Napier, 2004b) rather than specifically examining the issues of interpreting as a means of accessing the curriculum. There is concern that mediated instruction via sign language interpreting, even if the interpreting is highly accurate in its rendition of the conceptual and linguistic features of the instruction, may mean that this group of students is at risk of academic failure (Marschark, Sapere, Convertino, Seewagen & Maltzen, 2004; Napier & Barker, 2004). Added to this is the concern that DHI students are often unprepared, or less prepared in comparison to their hearing peers, of not only content knowledge but also general world knowledge. Therefore, educators and interpreters need to have heightened awareness of the communication needs of individual DHI students, to ensure appropriate access to information (Stinson & Kluwin, 2003).

Ozolins and Bridge (1999) predicted that the need for sign language interpreters would increase in Australia due to increasing provision of Auslan (Australian Sign Language) in education, but insufficient numbers of qualified sign language interpreters is still an issue. Reffell and McKee (2009) observe that although funding is available for interpreters in New Zealand tertiary institutions, the availability of this service is often compromised by a shortage of interpreters. This shortage is primarily due to the increase in demand for interpreters' services at the tertiary level, and the limited availability of interpreters with the appropriate skill levels to work effectively in tertiary education settings. A number of researchers, both in New Zealand and overseas, have echoed this finding (Hyde *et al.* 2009; Jones, Clark, & Stolz, 1997; Knox, 2006;

Komesaroff, 2005; Power, 1990; Russell & Demko, 2006; Sameshima, 1999; Traynor & Harrington, 2003).

Researchers have examined the experience of students who prefer an oral-aural method of communication and who do not use a sign language interpreter. The students' use of residual hearing combined with hearing aids, cochlear implants, and lip-reading, enables them to appear to cope well in favourable listening conditions, such as quiet environments or in one-to-one situations. The reality for many is that they may be struggling when attempting to access content in lectures and tutorials where conditions are less than favourable. Spradbrow and Power (2004) surveyed 18 DHI students at an Australian university in which three-quarters of the participants felt they were missing out on some of the content of lectures and tutorials, despite having access to notetaking support.

Institutions frequently provide notetaking services for DHI students and these services are vital links to the learning environment. Notetakers are an essential support service, as taking their own notes is a difficult task for DHI students. This is due to a variety of factors, including the challenge of attending to multiple visual communication sources such as interpreters, lip-reading, and teacher demonstrations. Typically, peer or professional notetakers provide the notes, which are then given to the student after each class. Sameshima (1999) suggested there was a lack of clarity about training, remuneration, and role boundaries for notetakers, and that as many notetakers are "buddies" (hearing classmates) her study identified issues about the quality and accountability of such a service. Bull (1996) concluded:

...using an independently contracted notetaker means that the legal and ethical agreements and safeguards are included in the employment contract,

whereas no such systems of accountability can be implemented in an informal support peer arrangement. (p.14)

A student notetaker who is enrolled in the same class is required to participate in discussion and activities to enable their own learning to take place, and as such cannot put as much thought and concentration into taking appropriate and meaningful notes. The training of notetakers is paramount; simply because a student can take decent notes for themselves, does not always indicate they can take appropriate notes for others (Saur, 1992). In 2010, the Department of Education and Training in Queensland Australia produced a series of resource sheets based on notetaker training modules from Griffith University (Stephens, 1991), and outlines nine strategies notetakers can implement to provide quality notes for DHI students.

The role of real-time speech-to-text transcription services has grown over recent years as a way of supporting DHI students' access to the content of lectures. Stinson, Eisenberg, Horn, Larson, Levitt, and Stuckless in their report of the (US) *National Task Force on Quality of Services in the Postsecondary Education of Deaf and Hard of Hearing Students* (1999) reported:

This experience has clearly demonstrated that these services are a viable option for supporting the communication access of many deaf and hard of hearing students, in settings where they are interacting with hearing people.

Speech-to-text transcription services provide students with an account of the lecture in one of three ways - with a stenographic type machine, voice-activated software or a standard computer keyboard. C-Print, for example, is a speech-to-text system developed at NTID in which a trained captionist, skilled in using an abbreviation system and the use of text-condensing strategies, produces text of the spoken information.

“The captionist includes as much information as possible, generally providing a meaning-for-meaning (not verbatim) translation of the spoken English content” (NTID, 2011). Stinson, Elliot, McKee, and Francis (2000) describe the main benefits of real-time captioning. First, it is possible for the display to remain on the screen, which allows students to check back and fill in any information they may have missed during the lecture. This is especially so if a second laptop computer is connected for the student and the computer has a split screen, which allows the student to see the captions on one side of the screen and enter their own notes on the other. Additionally, this is a useful facility for asking and responding to questions in real-time as the student can type their answer or response, and the captionist can then read it out. Second, technical terms and vocabulary are produced by the captionist ensuring exact terms are captured, and third, a copy of the complete transcript, either electronically or in hard copy, may be available after class for the student to revise the lecture content.

Findings from a qualitative study (Elliot, Foster & Stinson, 2002) indicate that students found the speech-to-text service valuable and used the transcripts to revise content, study for tests, prepare assignments, and clarify missed information. In terms of student preferences for notes, either from a notetaker or from those provided by a real time transcription service, most students in a different study preferred a printed hard copy of the text produced in class (Elliot, Stinson, McKee, Everhart & Francis, 2001). However, the researchers highlight the fact that access to extensive notes may increase a student’s workload due to the time it may take to identify salient points within such a large amount of reading. Therefore, having a trained notetaker able to organise lecture notes, which highlight key points, associated out of class tasks, and assessment related issues effectively, is invaluable for DHI students (Hastings, Brecklein, Cermak, Reynolds, Rosen & Wilson, 1997).

Findings of a recent study (Stinson, Elliot, Kelly & Lui, 2009) indicated that how well students comprehend and retain lecture content obtained via speech-to-text or notetaker notes related primarily to their reading comprehension, rather than their communication preferences for instruction. These results further reinforce the need for DHI students to possess adequate literacy and language comprehension skills when undertaking tertiary level studies (Marschark, Lang & Albertini, 2002).

Speech-to-text transcription is a superb example of technology currently used with DHI students in the tertiary environment. Numerous studies have identified that these students are increasingly using such technology to assist their access to information, as well as the internet, email (Bowe, 2002), and instant messaging (Bowe, 2000). In individual semi-structured interviews, Lartz, Stoner, and Stout (2008) investigated perspectives towards assistive technology with nine DHI students studying at a large US university. Participants identified assistive technology as “overwhelmingly positive, assisting communication with professors and hearing peers, and facilitating inclusion within the classroom and university community” (p.81-82). Identified barriers included the complex nature of processing and the coordination of information from the interpreter, the lecturer, and assistive technology during class.

The option of on-line learning has been promoted as a method possibly providing a more level playing field for DHI students when accessing lecture content, and facilitating better interaction of these students with their hearing peers. These findings might hold critical insights for effective teaching and learning for all students. For example, Mallory, Long, and Davis (2003) found that DHI undergraduates taking mainstream education courses using videoconferencing felt that the online learning format provided notable communication related advantages, compared to on campus classes. Long, Vignare, Rappold, and Mallory, (2007) in a further study, focussed on blended learning instructional formats in which students completed part of the course

online. They concluded that students with hearing loss felt they were able to have direct access to their peers' thinking, and that this format allowed for free sharing by students who felt challenged to do so in a traditional class situation.

In some ways, providing an option for online communication helped level the playing field and allowed the deaf and hard-of-hearing students greater ease of communication with peers and instructors. This may be why over 75 percent of the students with hearing loss said that other students should have the opportunity to take a class like this in the future. (Long *et al.* 2007, p.8)

Richardson, Long and Foster (2004), found that both the DHI and hearing students were highly motivated and engaged with faculty at their institutions, but that the DHI participants expressed difficulty in communicating with course peers. They expressed feelings of physical and social isolation, but felt online learning provided distinct communication advantages when compared to traditional courses for which an interpreter was required. Leutke (2009) found 77% of study participants with a hearing loss, said that taking a Web-based course helped them avoid problems with notetaking, interpreters, and communication with faculty sometimes experienced in on-campus courses.

Slike, Berman, Kline, Rebilas, and Bosch (2008), reported on online technology that facilitated aspects of lectures or tutorials. This involved a 'virtual classroom' that included PowerPoint lecture material, sign language interpreted video, chat, and text opportunities. It also catered for forms of class participation, such as the ability to signal when a student wished to ask or answer a question. The conclusions were that this method of teaching could be a "powerful and effective method for educating both deaf and hard of hearing students" (Silke, *et al.* 2008, p. 308).

Tutoring has become a common service provided to assist DHI students' academic success. Institutions provide tutoring in a number of ways, but it is primarily made available through one-to-one assistance. The role of the tutor is to support the acquisition of knowledge and skills that relate to the objectives and content of the study programmes, but may also relate to enhancing a student's generic learning strategies. This, in turn, may lead to more independent and productive learning for the student.

As DHI students' literacy levels are often lower than required at tertiary level, one identified way of addressing disparity is the use of language tutors. British researcher Barnes, defined language tutors' responsibilities as (a) to help students prepare for assignments, (b) to advise students on the presentation of their written work, (c) to facilitate access to texts by modifying language (including examinations), and (d) to work bilingually to assist students in accessing curriculum as well as university life (2006, p. 180). Barnes conducted interviews with students who were DHI and their language tutors, and concluded that the "role of an LT is necessarily complex and not fully understood by tutors or students" (p. 200). She recommended further training and the need for policy and standardised qualifications to improve access to, and quality of, support services.

Communication that is easy and fluent between the tutor and their students increases the students' motivation, thereby indicating that the selection of tutors for their ability to communicate with the student, not only their knowledge of the subject, is critical. The ability of the tutor or instructor to identify student preferences in learning style is also a key consideration (Lang, Biser, Mousely, Orlando, & Porter, 2004; Lang, Stinson, Kavanagh, Lui, & Basile, 1999; Saur, 1992; Toscano, McKee, & Lepoutre, 2002). DHI tertiary students' value tutors who can communicate effectively with them regardless of their communication preferences. "It is important that prospective tutors have training to communicate fluently in a range of communication methods or that efforts are made

to match the communication methods and skills of tutor and student” (Lang *et al.* 2004, p. 200).

There have been a number of studies highlighting the fact that, for DHI students, access to mentors is also desirable (Rogers, Muir, & Raimonde Evenson, 2003; Saur, 2000). Mentoring relationships can be formal, such as specific mentoring resources put in place by a disability support office, or informal, such as peer support and networking. Many people might assume mentoring roles, including teachers, counsellors, significant peers and other adults during a student’s school years, through to instructors and advisors during tertiary education years. Making an effort to communicate with DHI students and the offering of emotional support can have a significant impact on the DHI person in terms of self-confidence and belief in themselves, particularly in the context of tertiary study (Foster & MacLeod, 2004). In turn, this may lead to better academic persistence and higher personal satisfaction.

Several studies raised the concern of DHI students not accessing available support services for a range of reasons. Some students choose not to identify themselves to student support programmes. Others may identify themselves, but choose not to use the services offered (English, 1993; Hyde *et al.* 2009; Luckner, 2002). As mentioned, students may not fully realise what their needs are, or which accommodations or supports would be most appropriate to meet those needs. Another factor identified was students not understanding the differences between high school and tertiary education environments. For example, in high school a student with a hearing loss may not need a notetaker because of smaller class sizes, less background noise and the ability to copy notes from the blackboard or rely on a single textbook. Within a tertiary institution, students could find themselves in a large lecture theatre with an instructor who simply lectures from their own notes (Menchel, 1996; Russell & Demko, 2006). As well, students may not have the necessary knowledge, skills, or confidence to advocate their

own needs in this new environment (Luckner & Muir, 2001; Lynch & Gussel, 1996; Saur, 1992). It may also be that students are denying or minimising their communication needs in order to 'blend in' with the other (hearing) students (Menchel, 1998; Richardson, Long & Woodley, 2004). Matthews describes non-disclosure by students with disabilities as 'invisible' students, "Given prevailing attitudes towards people with impairments that often present them as pitiable or unable to help themselves, refusing to identify one's self as disabled can be a rational choice" (2009, p.232).

The research literature reviewed has identified that there is more to inclusive instruction in tertiary settings than the provision of resources to enhance access to communication and information. Information conveyed during informal conversations and peer interactions, as well as varying instructor styles and behaviours contribute to the shape of students' learning experiences (Bills *et al.* 1998; Woodcock, Rohan & Campbell, 2007). Additionally, students with hearing loss often fail to access the full spectrum of life on the tertiary campus. Being integrated both socially and academically, and feeling part of campus life, is an integral factor for full inclusion. Support services must facilitate inclusion into both the social and academic systems of an institution. Further, they must specifically address support needs in order to improve the participation and persistence levels of DHI students in mainstream tertiary education settings.

New Zealand research

As noted at the beginning of this chapter, there has been little research examining DHI students in New Zealand in tertiary education. Provided in this section is an overview of the New Zealand research to date. Not all of the research is specific to DHI tertiary students or tertiary institutions, nor are they necessarily specific to DHI

students. There are other groups perceived to be disadvantaged in tertiary settings, such as, people with disabilities, Māori, and low-socio economic groups. I use these contexts, related to DHI tertiary students' experiences, to place the current study firmly within a New Zealand context.

In 1994, the Report of the Ministerial Consultative Group, for funding the growth in tertiary student enrolments over the next decade, stated that a principal goal for the New Zealand government must be to encourage increased participation by under-represented groups in tertiary education and training. This was to include improved access to tertiary education by groups such as Māori, Pacific Islanders, lower socio-economic groups, and people with disabilities. The *Tertiary Education Strategy 2002-2007* restated this goal (Ministry of Education, 2002). To this end, there have been some New Zealand reports focussing on challenges for Pasifika students (Anae, Coxon, Mara, Wendt-Samu, & Finau, 2002) and support for Māori students (Hunt, Morgan, & Teddy, 2001; Levy & Williams, 2003; Nikora, Levy, Henry, & Whangapirita, 2002; Rua & Nikora, 1999) and post-graduate students with disability (Holt & McKay, 2000). A recent New Zealand study focussed on recruitment, retention, and achievement of Māori students at Otago University (van der Meer, Scott & Neha, 2010) and found that their challenges related to academic workload and having confidence to ask for help.

In 2009, the New Zealand Tertiary Education Commission (TEC) produced its first report measuring tertiary sector performance against identified educational performance measures. The TEC tracks patterns of student participation (enrolment) and the subsequent: successful completion of courses, withdrawal (i.e., students not continuing to the second year of their qualification, and completion of qualifications. Reported measures are for all students, but specifically focus on the achievement of Māori and Pacific peoples and younger students (under 25 years). According to the TEC Annual Report (2010), the course completion rate for 2009 across all courses was 79%, which

was up slightly from 2007. First-year attrition rates for all students undertaking tertiary education rose from 48.4% to 50.2%. However, the TEC identified that Māori and Pacifica attrition rates continue to be higher than average, and an area requiring particular focus (TEC, 2009). Even given this imperative from TEC, there remains little New Zealand research in the area of student retention and student support.

In this context of national data, with some focus on disadvantaged groups, there is even less research examining the situation for DHI students at the tertiary level. No provision for tracking students with hearing loss across their compulsory or postcompulsory education has been included at this stage, and thus it is not possible to measure course completion rates in tertiary education at a national level. However, some potential comparators exist internationally.

As mentioned, the overall degree completion rate for DHI students at Griffith University, was 70%, and comparable with the completion rates for hearing students (69%), across Australian universities (Hyde *et al.* 2009). Rochester Institute of Technology report overall graduation rates as being 73% for DHI mainstream baccalaureate programmes, which compared favourably with the US national average of 50% of hearing students (Marschark, Richardson, Sapere & Sarchet, 2010). However, it is difficult to relate these outcomes directly with the situation in New Zealand where completion rates are likely to be lower for a number of reasons, including the lack student tracking systems and specialist support services at New Zealand tertiary institutions. These international data however, may well suggest future benchmarks.

In the studies that do exist, DHI students in New Zealand are described as not being adequately prepared for tertiary education and, on average, have lower academic achievement than hearing students (AC Nielson, 2000; Fitzgerald & Associates, 2000; McKee & Smith, 2004; Pritchett, 1998). In her study of DHI children's reading comprehension in southern New Zealand, Pritchett, an Advisor on Deaf Children,

collected data indicating that two-thirds of pre-lingually, severely and profoundly deaf children aged under 16 years were unable to understand reading material that 77% of hearing children of a similar age, could understand. This reflects research from international contexts (Bowe, 2002; Cuculick & Kelly, 2003; Easterbrooks & Huston, 2001; Kelly, Albertini & Shannon, 2001; Padden & Ramsey, 1998, 2000) and suggests a persistent struggle to achieve age-appropriate reading ability in New Zealand and internationally.

The Fitzgerald report (2000) examined the state of educational provisions and achievement for deaf students in compulsory education in New Zealand. They researched a randomly selected sample of 22 DHI students using direct observation and expert opinion on the students' work. The report described the environment in which the students were being educated, the key issues and the needs that students faced. A third of the sample (excluding very young children) had limited understanding of teacher information or instruction in mainstream settings. These children with mostly severe or profound hearing losses, were not provided with information visually, and struggled with background noise. Levels of interaction with staff and other students varied considerably for those students in mainstream environments, working "well" or "very well" for many (48%) and "poorly" for others (31%). Teachers judged over 75% of the children, to be operating below the average ability level for their age. The more severe the hearing loss, the further behind the children were, and these educational gaps tended to increase with age. While there was no correlation observed between self-esteem or social integration and students' levels of hearing loss, educational setting, or academic performance, there was a significant positive correlation between self-esteem and social integration with the age of the student. According to their parents and/or teachers, the high school students in the study had significant problems in this area.

Fitzgerald concluded that:

The academic performance of this group is generally below that of their hearing peers. Half of the students in the sample have significant social and personal developmental needs, including social isolation, anti-social behaviour, or low self-esteem. (p. 3)

Fitzgerald suggested that mainstream services do not work effectively for all students and that there is a need for far greater accommodation of the environment, such as visual presentation of learning material or the effective use of adaptive technology such as FM systems, and speech-to-text captioning, to accommodate hearing loss and its consequences. In conclusion, the researchers made several other recommendations including the need for programmes to deal with students' social needs through counselling, self-esteem, and social skills training. In a more recent study, Fitzgerald and Associates (2010) reiterated their earlier findings of significant unmet needs in terms of communication development, and social support.

The issue of social isolation was also addressed by Kent (2003) in a survey, based on the World Health Organisation's Health Behaviour of School-aged Children questionnaire, with 52 mainstreamed DHI students aged 11, 13, and 15 in New Zealand high schools. The survey included two questions about loneliness. Kent found the reported loneliness of DHI students to be statistically significant, and concluded, "Identifying one's self as HOH [hard of hearing] continues to be socially undesirable for mainstream adolescents" (p.322).

An earlier New Zealand study undertaken by Stewart (1984), herself a teacher of the deaf, surveyed 55 young adults aged 18-21 years, with hearing loss ranging from mild to profound. Of these, 18 were mainstreamed without support, 14 were mainstreamed with some support, 12 were placed in deaf units and 11 in schools for the deaf. There

were significant concerns expressed by the researcher about poor levels of literacy and general educational skills, as well as poor acquisition of social skills. Stewart was highly critical of mainstreaming without appropriate support and recommended there be much better awareness of, and provision for, DHI children, including those with moderate levels of hearing loss. She further advocated consideration be given to the social effects of mainstreaming.

New Zealand research focussing on the experiences of DHI students or services provided at the tertiary education level commenced in 1981 (Alexander & Bridgeman) with a survey of services provided to students with disabilities with the (then) seven New Zealand universities. One university claimed to be able to cope with students with hearing impairments 'with ease,' one with 'relative ease,' three with 'relative difficulty,' and one 'with difficulty.' One university concluded that it was 'impossible' to provide for such students. The report made many recommendations about improving access for students with 'physical' disabilities but none on hearing access through technical means, or communication access through interpreters or notetakers.

Other New Zealand studies (Kirkland, 1990; McKay, Ballard & Smith, 1998; McKay, Rowlands, Ballard, Smith & Gleeson, 1995; Neal & Hayward, 1997) outlined the experiences and range of supports and services available to students with disability within the tertiary education sector. However, these studies made only passing comment about DHI students and their experiences. The main barriers identified in these early studies were physical and attitudinal, compounded by lack of institutional resources. Wilkins and Lambert (2005) believed that the implementation of specific institutional funding for tertiary students with disability in 1998, and the fact that their campus was relatively new and built with accessible buildings, meant that attitudinal barriers, and the need for flexible teaching and assessment practices, were the main issues for their institution.

A disability liaison officer at Auckland Institute of Technology was the first to undertake a study, which paid attention to the needs of DHI students within tertiary education in New Zealand (Murray, 1994). While the study investigated provision for all students with disability, Murray specifically identified barriers for DHI students, including the lack of qualified NZSL interpreters and notetakers, as well as a lack of money available to pay for these services. She also found tertiary staff had little awareness of the learning and cultural needs of DHI students, and that there was an inflexibility of assessment methods. Further, individual deaf students felt isolated and experienced a lack of peer support. Murray's recommendations included the establishment of two regional education programmes for DHI students, one based in Auckland and the other in Christchurch. Each would be in proximity to a tertiary institution, but with independent staff and funding, and involving DHI people as administrators and tutors. A further recommendation was that staff should include a balance of deaf and hearing people who are able to communicate with DHI students, with adequate support services and programmes designed to meet their social and academic needs. Murray suggested, "Direct action/mobilisation of those people directly disadvantaged by the current system" (p.217). In Murray's view, DHI students needed to advocate about the inequities they encountered in the tertiary system compared to other students.

Also in 1994, Carr undertook a survey of 66 New Zealand DHI students, to obtain an account of their experiences and needs within the tertiary education system. Carr conducted a written survey, sent to disability officers in 35 institutions, including both schools for the deaf and the Deaf Association of New Zealand (DANZ), with a request that they distribute the surveys to their known DHI students. Carr entered each completed survey onto a database. Her conclusions were similar to those of Murray (1994) in that she recommended more staff and greater student awareness around the

issues faced by DHI students. Resources needed to be more easily accessible; there should be more emphasis on providing superior quality notetaking and interpreting services, and further, disability support services should assess all DHI students on an individual basis. Carr also reported that DHI students needed to take responsibility for identifying the accommodations they required to access the curriculum content.

The National Foundation for the Deaf and the McKenzie Trust initiated the most comprehensive New Zealand research to date. It consisted of a national research project initiated in 1994 to identify, (a) the number of deaf students attending tertiary education and training and their level of enrolment relative to other groups (e.g., the hearing population), (b) what were the resource needs and what resources were currently available for deaf students at the tertiary level and, (c) what were the best ways of improving resource systems for deaf students to optimise their enrolment and learning opportunities (Logan, 1995).

To ensure that DHI students had equal access to tertiary education, these researchers made several key recommendations to the national government and the Ministry of Education. They noted that full resourcing for the needs of DHI students had significant cost implications, additional funding was required, and further, the resources available to support DHI students were extremely limited in tertiary settings. At that time, the Ministry of Education did not collect data on how many DHI students there were in tertiary education settings, what their resource needs were or what the costs were of providing these resources. The researchers were unable to ascertain the number of DHI students. Their recommendations therefore, included the establishment of a national database and development of a national policy regarding support for DHI students in tertiary institutions (Logan, 1995). There has been no implementation of any of these recommendations to date.

Sameshima (1999) recorded the experiences of DHI students at polytechnics and universities across New Zealand. She collected written survey data from 28 past and present DHI tertiary students, and followed this with interviews with 10 of these students. The research also involved a less extensive written questionnaire returned by 15 disability coordinators. Key issues identified included poor quality of education prior to entry to tertiary education, and insufficient numbers of qualified sign language interpreters and notetakers. There was also a general lack of awareness about deafness by tertiary institutions, with most disability coordinators not having the necessary knowledge to understand or assess DHI students' needs effectively. Difficulties with academic learning, due to poor literacy skills and an inability to interact meaningfully with their hearing peers, affected the DHI students' ability to participate effectively in tertiary environments.

Crabb (1999) in her undergraduate thesis investigated the needs of DHI students considering tertiary education by reviewing previous studies, and including her own experiences as manager of a disability support office at a large tertiary institution. Crabb concluded that in order to achieve success in tertiary education, DHI students' required appropriate funding provisions, and support tailored to individual needs, rather than a one-size-fits-all approach.

More recently, New Zealand Deaf adults' accounts of their educational experiences, at school and within the tertiary education system, described social isolation and barriers to academic progress. They identified limited access to communication, lack of adaptation of learning tasks and alternative assessments, and the nonexistence of Deaf academic role models (Dugdale, 2002; McKee, 2001). In Dugdale's research over half of the 86 respondents reported that they did not attempt any formal national examinations while at secondary school. Of the balance, 31 attempted School

Certificate subjects and 12 completed Sixth Form Certificate or University Entrance qualifications.

It was clear that placement in deaf units or mainstream schools, or both, was favourable to academic success. The data on tertiary level studies showed a wide range of trade training and Polytechnic programmes attempted, with mixed success, and several successes at university. (p.93)

McKee (2001) interviewed over 40 Deaf New Zealanders in an attempt to capture their 'voices' about what it means to be Deaf in New Zealand. To support accuracy, the researchers recorded the interviews in NZSL, and then translated into English as a narrative. Although very few of the Deaf people in McKee's analysis had experienced a tertiary education, there was a recurring theme of a ceiling on Deaf people's achievement, especially regarding education and career opportunities.

The stories overwhelmingly reveal the challenges that Deaf people face in growing up and navigating Deaf and hearing environments at home, school and work. They show what Deaf people can do and aspire to do, which is often in contrast to the opportunities they have been offered (McKee, 2001, p.14).

Conclusions

In summary, the findings of previous research that examined the experiences of DHI students in tertiary education have pointed to the difficulties these students encounter when transitioning to, and participating in, tertiary education. They encountered a range of barriers to their learning and participation. These include functional, environmental, and attitudinal barriers such as classroom participation, accessing the curriculum in an equitable way, and the sense of academic and social inclusion. Accommodations that

assisted their learning and persistence in tertiary education included a provision of support services, such as notetakers and interpreters, but this did not necessarily 'level the playing field' for these students, or address their social needs.

The small number of studies available in New Zealand, reflect several findings from international studies, regarding the conditions necessary to support the inclusion and participation of DHI students, in tertiary education. Despite these findings, the New Zealand education sector has shown only limited commitment in policy and in funding to take up these findings, or provide the resources needed to support equitable outcomes for DHI students in the tertiary sector. Despite government reluctance to invest more in DHI students' tertiary education, institutions are now reporting enrolments and graduations of DHI students. The intersection between hearing loss and tertiary education results in complex issues, for which innovative solutions are required. Therefore, it is important to examine the experiences of these students, the institutions, and services that support them, to see how best to meet the needs and expectations of both the students themselves, and the institutions they attend.

Many studies focussed on this population come from North America, and often have the limitation of being conducted with students in tertiary institutions with significant numbers of DHI students. Researchers could argue therefore, that these institutions are potentially better prepared to accommodate the social and academic needs of these students. Currently most tertiary institutions in New Zealand report less than 10 Deaf students and fewer than 30 hearing-impaired students enrolled in their study programmes. Therefore, many of the overseas studies do not closely reflect the current tertiary educational situation for DHI students in New Zealand.

Sameshima's New Zealand study (1999) was the most closely aligned to the present study in that the research used both written and face-to-face interviews, but it had several differences. Two groups of participants were involved, 28 current or past

tertiary DHI students and 15 disability coordinators. The researcher herself identifies the fact that the sample of students was very small. Further, the study only targeted those students who used NZSL as their primary mode of communication, and therefore, did not represent the range of hearing loss and communication proficiency, found in the wider population. Additionally, the study was undertaken in 1998, which was the first year that the Special Supplementary Grant was available to assist tertiary institutions with the costs associated with the provision of support services to students with disabilities. Therefore, the services were operating in a very different environment from those currently found in New Zealand's tertiary institutions. The current study provides the opportunity to address these limitations through examination of the situation of a larger and more representative sample. In addition, the study's mixed method approach enables the research questions to be answered more fully and accurately than the adoption of only a quantitative or qualitative approach would allow. It also allows a more up-to-date examination of the ways in which tertiary institutions in New Zealand are responding to the needs of DHI students and how these responses accord with the principles of inclusive education.

As the literature review identifies, issues such as career planning, consideration of tertiary options, academic skills development, life management skills, internationally agreed rights to education participation, instructional accommodations, and a sense of self-determination are significant. It is vital that students have a high level of understanding; not only about their deafness, but also about the strategies that may reduce the barriers their hearing loss may impose on their capacity to be included, academically and socially, in tertiary education.

DHI students are a diverse group of people, and the challenges they face are individual in many ways. The international and national move toward full inclusion in compulsory education has meant that these students expect to access tertiary education

in the same way as their hearing peers. The *UN Convention of the Rights of Persons with Disabilities* (UNCRPD), which New Zealand ratified in 2008, acknowledges these complexities by focusing on educational outcomes for individuals, rather than the educational setting alone. It requires that "effective individualised support measures are provided in environments that maximise academic and social development, consistent with the goal of full inclusion" (UNCRPD, 2006, p.16-17). In addition, Articles 24(3), (4) and (5) provide some explicit guidance on the types of specific measures that institutions should provide to enable DHI students to access education (Appendix E).

The available literature demonstrates the limited insights into the participation of DHI students in tertiary institutions within New Zealand. As a result, it is difficult for disability support services, faculties, and institutions, to develop evidence-based practices and policies in the area of accommodations for this cohort of learners. This study will clarify the current experiences of New Zealand DHI students in today's tertiary educational environment. It will examine the current barriers identified by the students themselves, and expand on the knowledge obtained in previous New Zealand studies. In order to obtain maximum representation from the current New Zealand tertiary environment, this research took a national rather than provincial perspective, and included students studying at both universities and polytechnics. This helped to ensure the study captured the widest range of learners and their experiences as possible. It will also add to the international body of research in which relatively small numbers of DHI students are educated in mainstream tertiary institutions.

From the policy perspective, the findings could inform national policies on inclusion and equity, with reference to both the New Zealand Disability Strategy, and the New Zealand Tertiary Education Strategy. Further, they could enhance the implementation of both *Kia Orite, Achieving Equity: The New Zealand Code of Practice for an*

Inclusive Tertiary Education Environment for Students with Impairments and the UN Convention of the Rights of People with Disability.

CHAPTER THREE - METHOD

Introduction

In this chapter, I outline the design of the research project and provide information about the participant recruitment processes, ethical clearance, data collection, and analytical methods used, for all phases of the study.

The mixed methods design of the study

The central purpose of this study was to identify the learning and social participation experiences of DHI students in New Zealand tertiary institutions, examine the nature of these experiences, and then provide recommendations that may address barriers and enhance the implementation of national and institutional inclusion policies into practice. In order to achieve the best understanding, it was essential to engage both quantitative and qualitative methodologies, therefore, this study used a mixed methods design that, according to Flick (2009, p.33), allows the “development of sensitive designs in a pragmatic and reflexive way”.

The qualitative perspective would refer to this study as phenomenological research, which “seeks the individual’s perceptions and meaning of a phenomenon or experience” (Mertens, 2005, p.240). Further, Kvale (1996) describes phenomenology as studying people’s perceptions of the world to understand the diversity of their experiences, and then extract essential meanings to “make the invisible, visible” (p.53). The mixed methods design of the study combines the strengths of both qualitative and quantitative approaches, and using multiple methods to gather information, allows for greater accuracy of interpretation and enhanced validation (Morse & Richards, 2002; Yin, 2003a, 2003b). Further, using results from one method to inform those from another

method, or phase of the study, has advantages. Morse (2002) identifies the advantages of a mixed methods approach in this way:

By combining and increasing the number of research strategies used within a particular project, we are able to broaden the dimensions and hence the scope of our project. By using more than one method within a research study, we are able to obtain a more complete picture of human behaviour and experience. Thus, we are better able to hasten our understanding and achieve our research goals more quickly. (p.189)

The literature clearly identifies that there are several combinations of mixed methods available to the researcher. Studies can be predominantly qualitative, with quantitative methods supplementing the data, or the other way around. Alternatively, a study may feature both methods equally (Cresswell, 2003; Tashakkori & Teddlie, 2003). Thus, mixed methods research can consist of several phases, featuring both qualitative and quantitative methods in various combinations.

In this study, after a preliminary phase to identify an appropriate combination of methods, I then chose a two-phase sequential mixed methods procedure. The first largely quantitative phase, incorporated a written survey, and an in-depth qualitative exploration followed, involving interviews with a selected sample of survey participants.

Preliminary Phase

The preliminary phase carried less emphasis than the two following phases and consisted of two segments. Initially, I undertook a review of previous studies carried out in this area of interest, namely the learning and participation experiences of DHI students in post compulsory education. I then grouped the studies to show the issues

examined, the methods used, and their relative strengths and weaknesses (Appendix D). A range of methods was apparent including questionnaires, in-depth interviews, postal surveys, and student journal entries. Most research fell into two categories. The first related to persistence and withdrawal of DHI students in higher education and focussed mainly on outcomes (Foster & Elliot, 1987; Scherer & Walter, 1988; Stinson, Scherer & Walter, 1987; Stinson & Walter, 1992, 1997; Walter, Foster & Elliot, 1987). The second related to the integration of deaf students, both academic and social, and tended to focus more on the processes involved (Dowaliby, Garrison & Dagel, 1993; Foster & Brown, 1988; Foster & Mudgett-De Caro, 1991; Kersting, 1997; Leigh, 1999; Long, Stinson & Braeges, 1991; Hyde *et al.* 2009; Stinson & Walter, 1992; Warick, 1994).

From this process, I designed and trialled a written survey and conducted focus groups with nine New Zealand DHI graduates and four disability coordinators to confirm information from the literature, and gain their perceptions on the relevance and clarity of the survey. Neither of these groups was the focus of the main study, but it was expected that their recent experience of participation as students and disability coordinators in New Zealand tertiary institutions would provide valuable information.

From the feedback given by graduates and disability coordinators, I determined the methods that I believed would be most beneficial in examining the experiences and perceptions of DHI students currently studying at New Zealand tertiary institutions. I concluded that a written survey that incorporated quantitative and qualitative questions previously trialled, as well as further open-ended questions relating to social engagement and integration, would be the first phase of the research. The second phase would be to arrange in-depth individual interviews to obtain the rich qualitative data needed to contextualise such a study. While email and other communication technology have facilitated contact with and among DHI people, there was still a need for face-to-

face interaction indicated, and I further considered the logistical aspects of carrying out such a geographically challenging project.

The preliminary phase highlighted the importance of gaining the largest numbers of respondents possible. Therefore, I expanded the scope of the study to include all public tertiary institutions in New Zealand, rather than the original intention of only approaching the eight universities. This meant that approaches were made to a further 23 public tertiary institutions which included polytechnics, institutes of technology, and wānanga (an institution that provides education in a Māori cultural context) to obtain the widest possible response.

The purpose of the first phase was to obtain data from DHI students currently attending tertiary education institutions in New Zealand. Many previous studies of the experiences of DHI students studying at the tertiary level have used questionnaires as the primary source of data collection (Garrison, Long & Stinson 1994; Lang, Biser, Mousley, Orlando & Porter, 2004). One of the benefits of data being collected using written questionnaires is that it allows the researcher to obtain data from a distance and across larger groups of respondents. Due to the small numbers of DHI students at each institution in New Zealand, it was not possible to administer large numbers of questionnaires at the same time, and to visit each institution was not feasible. Therefore, I deemed that a written survey, sent out individually via email or post, was the most efficient means of gaining information.

Design of the written survey

Researchers have identified that some DHI students' literacy levels are below the normal expectations for people undertaking tertiary studies (Cuculick & Kelly, 2003; Marschark, Lang & Albertini, 2002; Smith-Pethybridge, 2008). Fink, (2006) states that in order to obtain the best response rates from participants, consideration must be given

to ensuring that the questionnaire is ‘user-friendly,’ or in other words, accessible to the survey participants. Fink goes on to say, “A well-designed, easy-to-use survey always contributes to reliability and validity” (2006, p.8). Therefore, to ease accessibility the written survey was in plain English, neither too long nor too complex linguistically, to ensure students would be able to understand the instructions and the questions, and be able to respond.

The final version of the survey contained both fixed-choice (quantitative) and open-ended (qualitative) questions that collected background information, and asked the respondents about their learning and social participation experiences while studying at a tertiary institution (Appendix B). This is a concurrent nested design (Creswell, 2003) during which quantitative and qualitative data are simultaneously collected. I chose this method to gain a broader perspective by using the two different methods, as opposed to using the predominant method alone. Therefore, the survey was primarily a quantitative design, which had embedded some qualitative data acquisition, to enrich the description of the sample participants and their experiences (Morse, 2002).

The fixed-choice questions aimed to obtain a number of demographic details from each participant such as age, gender, and current educational qualifications. Fixed-choice questions were used as they provide more clear-cut categories, which are then easier to code, allow for statistical summaries, and are easier to analyse, enabling cross-group comparisons to be made (Lewin, 2005; Oppenheim, 1992). I asked participants to self-identify their level of hearing loss across four categories: mild, moderate, severe, and profound, reflecting categories used by New Zealand Audiological Society. Earlier researchers (Hyde & Power, 2004; Punch & Hyde, 2005) also used self-rating and teacher rating of hearing loss as part of their studies. In earlier work, Gomez, Hwang, Sobotova, Stark and May, (2001) conducted surveys to determine to what extent self-reported hearing loss was in agreement with pure-tone audiometry, and determined self-

reporting to be a moderately reliable measure of hearing impairment. Further information was gathered about the student's preferred method/s of communication (e.g., spoken English, New Zealand Sign Language, signed English), primary cultural/linguistic affiliation (Deaf, hearing-impaired, bilingual/bicultural, hearing), type of previous school setting in both primary and secondary school, and the nature of the use of hearing aids or cochlear implants. With regard to tertiary education experiences, the questionnaire sought information about programmes studied, and reasons for choosing their particular tertiary institution.

Additional fixed-choice questions using five-point Likert scales enquired about types of communication tools used (both technological and human), the use of disability support services, generic education and communication services, and how useful the participants found these supports. Questions also asked students how they felt their hearing loss affected their ability to participate in both academic and social situations within the tertiary institution. Finally, participants were asked to rate their overall satisfaction level with current teaching and learning experiences, and social interactions. For this question, a fixed-choice four-point Likert scale was used in which the neutral response was removed, thus forcing the respondent to decide whether they lean more towards the satisfied or unsatisfied end of the scale. Hyde *et al.* (2009) in an earlier Australian study of the experiences of DHI students at a Queensland University used similar categories of questions.

In order to extend the quantitative results, several open-ended questions were included asking participants to describe major challenges and highlights with their learning and participation experiences within the tertiary institution. As well, I asked for any recommendations they may have to give DHI students thinking about tertiary study. Finally, there was a section, which invited students to write about their own

specific experiences, and anything else they felt might be relevant to understanding their experience of studying in a tertiary institution.

Phase One

Recruitment of participants

There are 31 publically funded tertiary education sector institutions in New Zealand. I made initial personal contact with each tertiary institution's disability office manager/coordinator, and followed this with a written approach that outlined the research objectives and requested their assistance to identify possible participants (Appendix A). I used this method because a national database of DHI students is not available in New Zealand. For this study to be successful, it was essential to gain support and assistance from the various disability support offices. Lofland and Lofland (1984, p.25) claim, "Gaining entry to a setting or getting permission to do an interview is greatly expedited if you have 'connections'". As I was a disability coordinator at a tertiary institution when I commenced this study, I was able to use my professional contacts to ensure the progress of my research at this stage. I received much support and cooperation from this group of professionals, and this helped make the collection of data much easier, and more comprehensive, than it might otherwise have been.

With one exception, all institutions approached were satisfied with the project's ethical clearance gained from Griffith University Human Research Ethical Committee. However, one institution required that I also gain approval from their own ethics committee, which I subsequently did prior to collection of data. To comply with the ethical clearances received, each institution's disability support services needed to identify prospective participants. The criteria used by disability coordinators for selection of possible participants were twofold; the student had identified a hearing loss

and registered with the disability support service. The institution's disability coordinator, either in person or via email, initially contacted these students inviting them to participate in the research. This initial contact included two information sheets; one was a brief version, and the other a detailed description of the research project (Appendix A). The reason for developing the two versions was to provide information about the study in a way that did not discourage those students who may have lower reading skills. Providing a brief version, meant students would have the information they required to make a decision about participating, with a more in-depth version available for those who desired further information before responding to the request. If students were interested in participating, they contacted me directly to confirm their interest. I then provided further information if requested, and an informed consent form that outlined the purpose of the research, the process used and the student's ability to withdraw at any stage without impact on any of the services they currently received (Appendix A). I sent those who returned the consent form the questionnaire (Appendix B), either in hard copy or via email, depending on the student's preference.

For reasons of confidentiality, it is unable to be ascertained exactly how many students were contacted by the disability coordinators, but earlier communication from various institutions indicated approximately 800 DHI students being registered with disability support services in 2007. Most institutions reported fewer than 10 students identifying themselves as Deaf, and fewer than 30 students identifying as hearing-impaired. There were three exceptions to this, one institution offered distance (or external) study, one offered a certificate level course in Deaf Studies, and another offered training for sign language interpreters and teachers of the deaf. In all, 88 students responded indicating they were interested in participating and had questionnaires sent out. Sixty-four students returned questionnaires, and all were included in the final sample.

Phase Two

The purpose of the second major phase of the research was to collect in-depth qualitative data, that would expand upon and elucidate aspects of the data identified in phase one, with a selected sample of students who had completed the written survey. Qualitative methods usually rely on interviews and observation, however, due to the nature of the research questions posed in this study, namely gaining an understanding of student's participation and learning experiences from their own perspective, I deemed that observation was not an appropriate method of data collection. According to Strauss and Corbin (1998), interviews provide an opportunity to gather more in-depth responses. Therefore, the main qualitative data collection method used in this research was the interview. It was highly appropriate to gain data in this way as interviews have the added advantage of over-coming some of the challenges posed due to limited abilities, or specific communication needs of respondents, by collecting information using the person's dominant language (Mertens, 2005). Further, being able to converse face-to-face, potentially overcomes the issue of poor literacy skills impeding a person's written responses, and is an effective way to gather valuable data in the person's own words (Cohen, Manion, & Morrison, 2007).

At the end of the written questionnaire, it asked the respondents to indicate if they were prepared to be involved in a face-to-face interview, lasting approximately 90 minutes, at a time and place convenient to them. Most survey respondents (84%) indicated their agreement for an interview. To make the selection of participants for the interview, I used purposeful sampling, in which the researcher selects information-rich cases that are most likely to provide insights and in-depth understanding rather than generalisations (Kemper, Stringfield, & Teddlie, 2003). In identifying which students to approach for interviewing, I followed the principle of maximum variation sampling, which selects cases from the widest range of the sample as possible. This is "in order to

ensure strength and richness to the data, their applicability, and their interpretation” (Cohen, Manion, & Morrison, 2007, p.115). From the students consenting to this process, I selected eight participants for interviews, considering such variations as hearing loss, gender, study programme, cultural identity, communication mode, and geographical location.

Design of the interview guide

Miller and Glassner (2004) suggest, “Strength of qualitative interviewing is the opportunity it provides to collect and rigorously examine narrative accounts of social worlds” (p.137). The challenge lies in extracting the information as directly as possible without contaminating it by inadvertently saying or asking something that might bias the data. Therefore, I developed a semi-structured interview protocol in advance of the interviews. This protocol was initially trialled with the graduate students and disability coordinators, and then further developed from this group’s advice. The written survey responses also influenced questions (Freebody, 2003; Hutchby & Wooffitt, 1998) and provided a means of obtaining more in-depth data and, as each interviewee was unique, there was enough flexibility within the questions to explore each person’s responses further with probes, as the interview progressed. Lincoln and Guba (1985) defined probes as, “directed cues for more or extended information” (p.271). Probes can be as easy as an encouraging nod indicating that the respondent should continue, or they could be a question asking for more information (“Could you explain that a bit more for me....”), or the interviewer rephrasing what they think the respondent has said and checking for accuracy (If I understand you correctly, you are saying that....”).

Interaction between the researcher and interviewee is inevitable, and the quality of that interaction will have a significant impact upon data obtained. It is imperative, that the two parties feel comfortable with each other, and that the relationship is facilitative,

meaning active asking and listening, in order to share knowledge. As Miller and Glassner (2004) have identified, the ability of the interviewer to paraphrase the interviewee's response to the question, reflecting both content and feeling accurately, increases the likelihood that the interviewee will feel heard and understood and, therefore, increases the trust and rapport available. Additionally, Kvale (2007) observed, "the quality of the knowledge produced in the interview depends on the sensitivity and subject matter knowledge of the interviewer" (p.49). Knowing how and when to probe can help ensure the effectiveness of the interview, and the quality of data obtained.

The intent of the interview was to gather data that expanded on the information obtained in the written survey, to gain further understanding of the issues under examination from the point of view of the participants. As part of the warm-up phase for the interview, I asked participants about the tertiary institution they were attending, their current programme of study, and their career goals. I also enquired about aspects such as their family relationships, communication methods used at home, and their identity in relation to their hearing loss. Additionally, I posed a number of questions that focussed on their academic, social, and emotional readiness for tertiary study, as well as academic and social experiences at their current institution. Appendix B contains a copy of the semi-structured interview guide.

Interviews

The interviews took place during semester one 2008, in a number of settings. I conducted seven of these interviews face-to-face, in four New Zealand cities, and all were audio taped for later transcription. This included those interviews undertaken using a sign language interpreter whose 'voice' I recorded for later transcription. Due to the remote geographical location of one of the participants, I conducted an online

interview using an instant messaging programme (IM). This proved to be an acceptable way to interview this respondent as they had touch-typing ability and excellent literacy skills. Each interview lasted approximately 90 minutes.

The language and communication mode used for each interview depended on the student's preference. Five students communicated orally using speech, residual hearing, and lip-reading. As I am an experienced teacher of the deaf and competent with various communication methods, I employed these methods to ensure accuracy and understanding of both the information I received, and the questions posed. I am also able to communicate effectively in NZSL and signed English; however, I made provisions for a qualified NZSL interpreter for two students who had indicated they preferred to use NZSL as their main form of communication. I implemented this arrangement to ensure accuracy of translation, ease of communication, and to allow me to focus on my primary task of interviewing the students.

Issues central to the interview process

When gathering data through qualitative interviews, the researcher must address several issues. In this study, I considered issues that related to the interview situation directly, and those that are relevant to interviewing people with hearing loss. In a qualitative approach, as incorporated in the current study, the researcher is the "instrument for collecting data" (Mertens, 2005, p.247). Once we step into the role of researcher, we do not simply cease to be. The researcher needs to acknowledge the values, assumptions, and beliefs that they bring to the interview process, and systematically reflect upon them to identify the filtering of data "through a personal lens that is situated in a specific socio-political and historical moment" (Cresswell, 2003, p.182). According to Patton (2002) prior knowledge, experience, training and perspectives brought to the research can affect the way data are collected, analysed and

ultimately interpreted, by those who read or use the findings. Therefore, in order to maintain credibility “discussing one’s predispositions, making biases explicit, to the extent possible, and engaging in mental cleansing processes” (Patton, 2002, p.553) is necessary. Thus, in describing the qualitative phase of this study, it is appropriate to include some information about the researcher.

I have a particular interest in disability and equity issues, and have postgraduate qualifications in deaf education, and educational and guidance studies. I am a qualified primary school teacher as well as a qualified teacher of the deaf. I have lectured in the area of inclusive education, as well as in undergraduate teacher preparation programmes. I have previously worked as a disability coordinator at a tertiary institution, and have a long history of involvement with Deaf adults in both professional roles and social interactions. This personal experience has given me insights into the issues involved, which can be beneficial, as familiarity with the culture and context under study, may contribute insight and understanding. Fontes (2008) states:

Familiarity with a culture can help us guard against misunderstanding in all phases of the interview – such as choosing alienating or offensive survey instruments, greeting the interviewee improperly, or presenting the results in a harmful way. (p.29)

Familiarity can also have its limitations, in that there is a risk of preconceived ideas colouring the collection and interpretation of information received. Therefore, it was essential for me to adopt what Patton (2002) refers to as “empathetic neutrality” (p.50) which suggests that ‘empathy’ communicates that the interviewer is interested and understanding, while ‘neutrality’ implies a non-judgemental and open approach to what people say and do during the course of the interview. Foster (1993) addresses the question of a hearing person undertaking research in the area of deafness:

One might reasonably question whether it is appropriate for a hearing person to design and conduct research with deaf people. Without an insider's understanding of deaf culture, can I even select the right questions for the study? If I do, can I design a study and interview informants without alienating them? Can I establish enough rapport that they will describe their experiences, perspectives, and feelings to me? If I can, and they do, will I be able to analyse the data without imposing my world view on the process? Will the results reported truly reflect the experience of those I interviewed, or will they be a reprocessed version, interpreted and framed within the perspective of the hearing, and – not insignificantly – dominant culture?

(p.1)

Foster continues that, what is fundamental is a willingness to enter into a meaningful dialogue, and to place appropriate control of the research agenda in deaf people's hands. She described several strategies to improve the quality of the research, which I incorporated into the design of this study: (a) including qualitative methods, (b) seeking advice from deaf people themselves, (c) using an interpreter who was fluent in NZSL, and (d) acknowledging that we are all multi-positional. Meaning that, while I am not deaf, and do not share the characteristic of deafness with the participants, I do have other aspects in common with the interviewees, such as being women, students, and so on.

It was also essential to take into consideration the hearing loss of the interviewees who did not use a sign language interpreter. These students communicate with others orally using their residual hearing and lip-reading to receive spoken communication. In addition, their spoken communication is often a reflection of their hearing loss. Consequently, it was imperative to optimise the interview situation by ensuring each

interview venue was as quiet as possible, with good lighting to facilitate the most favourable conditions for both lip-reading and listening.

Prior to the interview, each participant had signed and returned consent forms. Before beginning each interview, I reminded the participants of the purpose of the study, the confidentiality of the interviews, and their right to withdraw at any time without prejudice. After answering any questions they may have had, I then turned on the tape recorder and proceeded with the interview. In interviews where I engaged a sign language interpreter, I deemed that an audio recording was still appropriate as the interpreter was 'voicing' for the Deaf student and as such, the recording adequately captured the students' responses. As with any interview, it is vital to ensure participants have the opportunity to add anything they feel my questions may have missed in the interview. To enable this, at the end of each interview I briefly summarised the main points making any additions or corrections, thus giving the student an opportunity to correct any errors on my part, which is a vital criterion in establishing credibility in qualitative research (Rubin & Babbie, 2008).

Data Analysis

To analyse data contained within the written survey accurately, I developed a coding manual, assigning numerical values to various demographic and fixed-choice responses. This was a simple and consistent way of representing each variable and made entering them easier into the software for further analysis. For example, demographic information such as the respondent's gender, was nominally (categorically) coded e.g. 1 = male 2 = female. The questions that used five point Likert scales (e.g. very little, a small amount, a fair amount, quite a lot, a great deal) were assigned ranked (ordinal) codes 1-5. I entered responses coded accordingly into SPSS, which is a statistical

software package, commonly used to analyse data. Using such software meant that I could perform basic descriptive statistics for all interval variables.

At the conclusion of the interviews, I transcribed the audiotapes. I chose to transcribe the interviews myself for two reasons; first having conducted the interviews, I was more likely to be able to decipher any unclear speech, and second, as a means of further immersing myself in the data. I numbered participants according to their original written surveys' allocated number, and then I used these numbers to identify transcripts, and any notes or memos I made regarding the participants during the process of analysis.

Data obtained from the interviews were analysed using thematic analysis (Stake 1995; Strauss & Corbin, 1998). Thematic analysis is a method in which categories that are relevant to the topic are identified by examining each interview transcript in depth. I initially identified themes for this study through inductive analysis, including my prior analysis of the literature regarding the experience of DHI students within the tertiary sector. I then explored the data further by working through the texts line by line for emerging themes and issues identified as significant to the participants. I utilized a method of constant comparison, using open coding, to identify categories and concepts found in the interview texts. I simultaneously compared individual units of information to all other units, and either categorised into an existing category, or formed a new category if no similar category existed. I then did further analysis through axial coding, designed to reassemble data that have been splintered during open coding. Axial coding expresses the idea that clusters of concepts (the spokes) are focussed around the central idea (the hub or axis) (Strauss & Corbin, 1998). The use of a software programme, initially QSR NVivo8 and more recently QSR NVivo 9, assisted my data analysis. This programme supports the process of open and axial coding through its ability to allow the researcher to code data into categories which are called "nodes" which are then,

“organised and moved into trees - hierarchical branching structures in which parent nodes serve as connecting points for subcategories or types of concepts” (Bazeley, 2007 p.83).

Once the data reached saturation point, that is no new categories were being developed, and no new ideas were forthcoming, I then initiated and categorised generalizations regarding the experiences shared by participants.

Summary

This chapter has described the methods used to address the research questions. It then detailed the process used to develop the written questionnaire and interview guide. Finally, I described the recruitment of participants, data collection and analysis, and the ethical considerations associated with this study.

CHAPTER FOUR - RESULTS AND DISCUSSION OF THE QUANTITATIVE DATA

Introduction

This chapter reports the findings of the quantitative phase of the study. It describes the demographic characteristics of the participants and variables relating to their social participation and learning experiences. A discussion of the results follows.

Characteristics of the participants

Due to the way that disability support offices contacted students, and the absence of government data on the number of DHI students in tertiary study in New Zealand, it is not possible to identify how many students received information about the study.

However, I was able to send 88 questionnaires to currently enrolled DHI students who had indicated their interest in completing the questionnaire. Of those, 64 students responded with completed questionnaires, giving the study a 73% return rate. Twenty-three respondents (36%) were male and 41 (64%) were female. As shown in Figure 1, the ages ranged from 17 to 66 years. Interestingly, a majority of respondents (53%) were over 40 years of age at the time of completing the questionnaire.

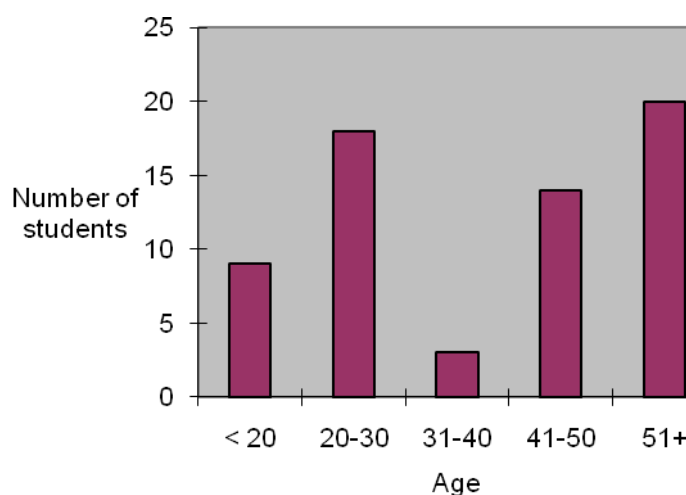


Figure 1. Students in this study grouped according to age range.

Fifty-five students, (85%) in this study came from families that had no other incidence of hearing loss, aside from presbycusis, as would be expected with statistics showing that between 90-95% of deaf children are born into hearing families (Moore, 2001). There were six respondents (9%), who had an extended family member, parent or sibling with hearing loss and three (4.5%) who came from Deaf families.

As shown in Table 2, a majority (64%) of respondents reported a severe or profound loss and (58%) of all respondents said, their hearing loss had occurred at birth or by three years of age. Further, 12.5% had a hearing loss identified by the time they were teenagers, 14% identified as having a loss in adulthood, and the remaining 16% reported a degenerative hearing loss.

Table 2

Level of Hearing Loss

Loss	Frequency	Percent
Mild	3	4.7
Moderate	20	31.3
Severe	25	39.1
Profound	16	25.0
Total	64	100.0

Three respondents indicated they had received cochlear implants, but two of the three said that they did not use their implant during the course of their studies. Sixteen students (25%) did not use hearing aids at all, but 42 respondents (67%) found their hearing aids ‘extremely useful.’ Of those students who used hearing aids, 64% indicated that they used their hearing aids ‘a great deal’ when participating in tertiary education.

The majority of respondents (73%) reported that spoken English (or, in two cases, another spoken language) was their primary language. New Zealand Sign Language (NZSL), or NZSL/signed English, combined to some extent with spoken English, was the primary communication mode for 17 respondents (27%). In terms of their primary cultural identity, 45 respondents (70%) identified primarily with a hearing community, 13 respondents (20%) indicated a bilingual/bicultural identity, and six (10%) reported that they identified mainly with the Deaf community.

Primary and secondary school settings attended

Table 3 illustrates the education setting attended during compulsory schooling by respondents whose hearing loss was present at the time. If respondents indicated more than one type of schooling, they were included in ‘other.’ Just two respondents attended a school for the deaf for any part of their secondary schooling.

Table 3

Types of Schooling

	Regular school with support from itinerant teacher	Regular school without support from itinerant teacher	Regular school with deaf unit	School for the deaf	Other
Primary	23.9%	56.5%	8.7%	8.7%	2.2%
Secondary	20.8%	60.4%	10.4%	4.2%	4.2%

Approximately 92% of respondents were educated in regular classes or at a regular school with a specialist deaf unit, during their primary schooling. Further, 60% of respondents, with a hearing loss during their school years, did not receive any itinerant teacher support at all during their secondary schooling, although all students with an

identified hearing loss would have received some AODC support. One respondent was home schooled for part of their primary and secondary education.

It is unlikely that the students attending regular schools would have been educated using sign language, based on the predominantly oral/aural communication practices for DHI children in NZ mainstream educational settings at the time. However, it should be noted that subsequently 27% of respondents reported using NZSL exclusively, or NZSL/signed English in combination with spoken English, and further, 30% of respondents identified themselves as bilingual/bicultural, or as identifying mainly with the Deaf community.

The survey asked students to indicate their highest qualification prior to attending university. Twenty-seven students (42%) had obtained a Year 13 qualification, 23 (36%) a year 12 qualification and eight (12.5%) had passed School Certificate or NCEA Level 1 (year 11). Six respondents (10%) had not obtained any nationally recognised qualifications while attending secondary school. However, in New Zealand once people have reached the age of 20 they have the option of direct entry to a tertiary institution, as prior qualifications are not a pre-requisite for entry as an adult student. Therefore, these students were not precluded from participating at the tertiary level, once they were over the age of twenty. However, as this is only provisional entry, before students can be accepted for further study, they must pass their course of study satisfactorily in that first year.

All 64 respondents were current students. Fifty-four (84%) were university students, and 10 (16%) were polytechnic students. Figure 2 identifies the number of respondents from seven universities and five polytechnics respectively. Twenty-four (37.5%) were full-time and the remaining 40 (62.5%) were part-time or limited full-time students. Limited full-time students receive the same financial support as full-time students, but due to circumstances such as disability, are unable to undertake a full-time programme.

Three students studied externally. The main reason given by 49 respondents (78%) for choosing their particular institution was that the institution had courses they wanted to study. Six respondents (9.5%) identified that they had “heard that they had support services for deaf and hearing-impaired people” as the main reason they chose the institution, and two further respondents (3.2%) indicated their main reason as being “knowing other Deaf people who had studied through that institution”.

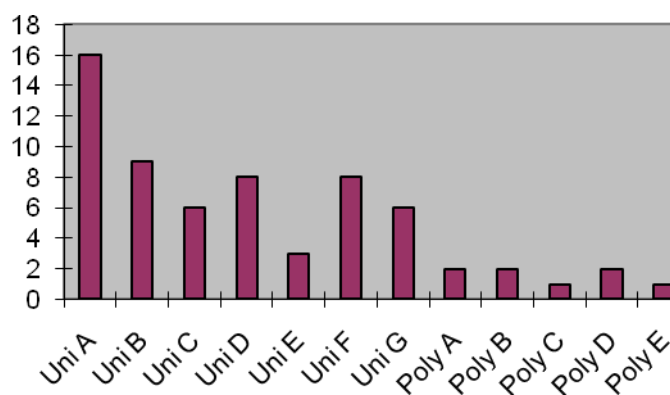


Figure 2. Number of respondents from individual tertiary institutions who returned written surveys.

Programmes studied

Respondents undertook a wide variety of academic programmes. Six of the 64 respondents (10%) were studying education or special education programmes ranging from certificate through to masters level. Other programmes identified included arts (25%), social sciences (10%), sciences (10%), law (8%), commerce (6.5%), then medicine, fine arts, theology, music, engineering, business administration (all less than 5% each). Forty respondents (64%) were undertaking Bachelor level programmes, eight (13%) were undertaking Masters level programmes, five (8%) were completing a PhD, three (5%) studying postgraduate diplomas, and certificate or diploma level accounted for a further six respondents (10%). Since the mid 1990s, access for DHI

individuals has extended to cover a wide range of programmes and professions as data provided in Appendix C, demonstrates.

Communication and participation

Table 4 shows the extent to which respondents felt their hearing loss affected their ability to participate in specific learning environments. The highest levels of reported difficulties were in lectures and social functions, and the least affected according to these quantitative responses, was the students' ability to access support services.

Table 4

Effects of Hearing Loss on ability to participate in different environments N=64

	Very little	A small amount	A fair amount	Quite a lot	A great deal
Lectures	7	13	15	12	17
Receiving instructions or supervision	10	15	18	9	12
Tutorials	12	14	15	10	13
Accessing services	25	18	7	3	11
Casual interactions with other students	11	16	14	10	13
Social functions	7	9	13	13	22

Accessing curriculum and support services

Academic accommodations are largely the focus for disability coordinators providing services to DHI students. As shown in Table 5, 54 respondents (85%) had accessed the services of their institution's disability support services at some point. Of those students, the majority (54%) perceived the service as being either 'very useful' or

‘extremely useful.’ For the remaining accommodations, notetaking was the most frequently accessed. Forty-One students had used manual or peer notetaking services, and of those, 73% found it either ‘very useful’ or ‘extremely useful.’ Thirteen students had used electronic notetaking, with 77% regarding the service as ‘very useful’ or ‘extremely useful.’ Sixteen respondents had used sign language interpreters as part of accessing their studies, and 87% found the service ‘very’ or ‘extremely’ useful.

Table 5

Usefulness of Academic Tools N= 64

	Not at all useful	A little useful	Somewhat useful	Very useful	Extremely useful	Didn't use
Interpreters	1	0	1	4	10	48
Disability coordinator	13	7	5	10	19	10
Manual notetaking / peer notetaking support	3	2	6	5	25	23
Laptop computer notetaking e.g. C-print or Stereotype	0	1	2	4	6	51
FM aids	1	4	3	2	3	51
Induction loop	2	0	0	1	2	59
Video conferencing	4	1	0	1	2	56
Blackboard – online access to lecture content	4	6	3	10	19	21

The questionnaire also enquired about use of generic services, those services that are available to assist all students at the institution. Table 6 shows that 36 respondents

(56%) had accessed at least one of the generic services such as; learning assistance, career advice, personal counselling, student association, and welfare services. Overall, however, the level of usefulness rating for these was low, apart from learning assistance, where 50% of those students actually accessing the service felt it was either ‘very useful’ or ‘extremely useful.’

Table 6

Usefulness of Generic Services N=64

	Not at all useful	A little useful	Somewhat useful	Very useful	Extremely useful	Didn't use service
Learning Assistance	4	4	5	2	10	39
Career Advice	4	1	2	2	2	53
Personal Counselling	2	3	2	3	5	49
Welfare Services	0	3	2	1	1	57
Student Association	3	3	5	2	1	50

Table 7 refers to the students’ academic and social satisfaction levels. In terms of the teaching they received, 93% of respondents felt either ‘somewhat satisfied’ or ‘very satisfied.’ In terms of the attitudes of both staff and other students towards the students who were DHI: 88% were ‘somewhat’ or ‘very’ satisfied with the attitude of staff, and similarly 87% were ‘satisfied’ or ‘very’ satisfied with the attitude of other students. However, those levels of satisfaction dropped to 75% for both the number of friends in class, and the contact they had with other students outside class. Students between 20-30 years of age expressed the most dissatisfaction with the number of friends they had in class.

Table 7

Academic and Social Satisfaction N=64

	Not at all satisfied	Not very satisfied	Somewhat satisfied	Very satisfied
Teaching received	1	3	23	36
Attitude of staff	1	8	18	37
Attitude of students	2	7	29	26
Number of friends in class	5	10	21	26
Contact outside class	5	11	23	24

Twenty-three respondents (36%) indicated that they did not access any external supports during the course of their study. Many students who used external supports, identified family and friends as principal supports, with 56% citing family and 60% citing friends. In addition, 25% cited other Deaf people, while 18% said they received support from the Deaf Aotearoa New Zealand (DANZ).

Statistical Analyses

Inferential analyses (ANOVA-one way) were attempted on the questionnaire data. However, these were restricted by the small population that could be accessed in this New Zealand study and the associated assumptions of the normality of data distributions. This was particularly the case for comparisons among individual factors or items.

Significant main effects were noted for usefulness of interpreters ($F= 15.9, p. > 0.001$), electronic notetaking ($F= 16.8, p. > 0.001$), technical aids ($F= 35.5, p. > 0.001$), and personal counselling ($F= 9.7, p. > 0.05$). These results were reflected in the qualitative results, and are discussed in the following chapter. Analyses of correlations among items showed significance among items assessing participation in lectures and

tutorials and social functions, but these correlations accounted for a small percentage of the variance and cannot be relied on.

Discussion

Characteristics of Participants

Age and Gender

The split between male (36%) and female (64%) respondents to this study, reflects generally the gender split in tertiary institutions for students identifying with a disability - 41% male, 59% female in tertiary education in New Zealand (NZ Ministry of Education, 2010a). The age of students in this study ranged from 17 to 66. Just over half of the students who responded to this study were aged over 40. This parallels with U.S. Department of Education (2010) data that shows that students with hearing impairments tend to be older than the general student population and reflects some data collected in New Zealand. However, New Zealand data does not specifically identify hearing-impaired student percentages, but refers instead to students with disabilities in general. “Students who had a disability were more likely to be aged 40 years and over. In 2009, 41 percent of disabled students were in this group compared to only 27 percent of total students” (NZ Ministry of Education, 2010b, p.58).

It is necessary to note that this study included a sizable number of postgraduate students, which increased the proportion of older students. However, New Zealand tertiary institutions were only mandated to provide support services to students with disabilities since the late 1990s, and may explain why many DHI students seem to enter tertiary education later in life, rather than straight from school. Clark’s (2007) analysis of data on students completing vocational education courses in the state of Victoria, Australia in 2003, which found that 59% of hearing-impaired students were in the 30 to

59 year age-bracket, supports this supposition. This aspect required further examination, obtained through the in-depth interviews, and is discussed in the chapter on qualitative data.

Hearing status

Just over half of all participants in this study were born with or obtained their hearing-loss before the age of three, and therefore, prior to acquiring the spoken language of their home environment. One of the most significant implications for early deafness is a lack of easy, or sufficient, access to meaningful communication at a critical period for language development (Clark, Marschark & Karchmer, 2001; Goldin-Meadow, 2005; Marschark, 1997). Most respondents were born to hearing parents and this parallels a reported 90% of deaf children being born to hearing parents in the USA (Mitchell & Karchmer, 2004; Moores, 2001). Thus, the majority of the communication occurring between these children and their hearing parents and teachers in earlier years would have been of an auditory-oral nature. If the acquisition of a spoken language by DHI children is hindered by reduced access to communication and language use in early life, then specific intervention is often required if the child is to develop age-appropriate literacy skills. Some studies have shown that DHI children with good signing skills also have good English literacy skills (Hoffmeister, 2000; Strong & Prinz, 1997). Other studies have shown that literacy development in young DHI children with cochlear implants is also enhanced (DesJardin, Ambrose & Eisenberg, 2009; Geers, 2003; Spencer, Gantz, & Knutson, 2004). However, for many of the subjects in the current study, the development and expressions of literacy would have been a continuing challenge.

After analysis of the qualitative written responses from the survey, it became apparent that it would be valuable to ask participants to rate their literacy skills, and

how well prepared they felt they were for the demands of tertiary study. I address these features in the interviews, and report the results in the following chapter.

Education

The majority of participants undertook their primary and secondary education in mainstream settings. Only 16 % of these participants in primary school, and 12% in high school had been educated in specialist deaf education resource units or schools for the deaf. This result is in keeping with the fact that it is estimated that 95% of DHI children in New Zealand are now educated in regular classes, usually with some support from a resource itinerant teacher of the deaf (RTD) or an Advisor on Deaf Children (AODC) (DEANZ, 2003, 2005; Mayer, Miller & Cocks, 2009). These figures are consistent with the primary and secondary education experiences of survey respondents identified in a recent Australian study (Hyde *et al.* 2009) and similar to those identified in an earlier Australian study (Hyde & Power, 2004) where 83% of DHI students attended regular schools alongside their hearing peers. This reflects the similarities between the philosophies, policies, and practices of the two Australasian education systems.

A significant proportion of respondents (60%) in this study, did not receive any RTD support at secondary school. Possibly this was because they attended a school where regular visits from specialist support teachers were not readily available to them, or it was believed that they did not require RTD support. All students with an identified hearing loss would, however, have been on an ADOC caseload and received a minimal level of support through that service each year. Sixty-four percent of the students in this study had a severe or profound loss, and would possibly have benefitted from more support during their secondary schooling. The fact that so many did not have the extra

support may have had implications for their feelings of independence and low expectations of their need for support at the tertiary level.

In terms of highest qualification prior to attending university, 78% of students in this present study had obtained a Year 12 qualification or higher. This is consistent with the 80% of all students studying at tertiary institutions for the first time in 2008 who also had obtained at least Year 12 qualifications. The other qualification figures are also very similar, 12.5% of students with Year 11 qualifications in this study, compared to 10.5%, and finally, those students without any nationally recognised qualifications while attending secondary school was 10% in this study, compared to 9% in the general education sector (NZ Ministry of Education, 2010c).

Communication choice and identity

Few respondents in this survey would have experienced NZSL during their primary or secondary education, as mainstreamed students generally experience an oral-aural communication mode. However, just over one-quarter of respondents indicated that they used New Zealand Sign Language (12.5%) or NZSL / signed English combined with spoken English (14.5%) as their primary communication mode at the time of this survey. Twenty percent of respondents indicated a bilingual/bicultural identity, and 10% said they identified mainly with the Deaf community.

Identity is a socially constructed process that emerges over time through experiences and interactions with significant others (Stinson & Whitmire, 2000). In a recent New Zealand study, Kent and Smith (2006) conducted unstructured interviews with 16 DHI students aged 12-17 in mainstream education, and concluded from these students' narratives that "identity synthesis is achieved to a large extent by interaction with [both deaf and hearing] peers" (p.473). In addition, Hyde *et al.* (2009) found that much of the shift in identity could be located during the period of tertiary study with other DHI

students. Bat-Chava (2000) and Nikolarazi and Hadjikakou (2006) also proposed that some DHI students who had grown up in a 'hearing world,' after encountering sign language or Deaf role models in adolescence or young adulthood, shifted to a bicultural or Deaf identity. Further, Smith (2004) reported that many students in her research had identified themselves as hearing or hearing-impaired until they met other DHI people or began to use sign language, once they commenced tertiary study. Finally, Najarian (2008) investigated a group of Deaf women, and concluded that these women had developed their Deaf identities after attending a college for the deaf or being exposed to the Deaf community and learning sign language.

It would appear from data in this study that, among other opportunities to meet deaf adults, the opportunity to mix with other DHI students, and possibly be exposed to NZSL as a means of communication within a tertiary educational environment, might have prompted some of the students to modify or change their identity to a Deaf or bicultural identity. During the interviews, I explored this aspect to ascertain just how and when this identity, or shift in identity, was formed, and what role tertiary education played in the process.

Choice of institution and study pattern

The main reason given by 49 respondents (78%) for choosing a specific institution was that it offered courses they wanted to study. This finding, also noted by Hyde *et al.* (2009) is interesting, as essentially these DHI students were choosing an institution based on the same criteria as other students, that is, it provided the course or qualification that they want to study. As identified earlier in the results, this group of DHI students studied a wide range of programmes at the tertiary level. However, unlike the findings in Hyde *et al.* (2009) the most common degree programme at undergraduate level for these students was a Bachelor of Arts, not a degree in teacher

education, even though one of the universities with a larger proportion of DHI students had a teacher of the deaf programme. This was followed by Bachelor of Laws, and at postgraduate level, the PhD. The wide range of courses, ranging from culinary arts through to business administration, suggested that career aspirations and programme choices were not being dictated or limited by the DHI students' hearing losses. Rather, students were choosing programmes that reflected their own interests and perceived abilities and as Jarvis and Knight (2003) note, "more and more deaf students are entering higher education and institutions and following courses alongside their hearing peers" (p.59).

Sixty-two percent of students in this study were either part-time or 'limited full-time' students. As noted earlier, in New Zealand, students can apply to be considered as a 'Limited Full-time' student, if the educational institution believes the student should study less than a full-time programme for reasons such as illness or disability. This student status is often granted to DHI students due to the additional time required to access and assimilate the course material adequately. The student is then able to receive the same financial support, (e.g. student loans and student allowances), as full-time students. The percentage of all students studying in New Zealand tertiary institutions reported by the Tertiary Education Commission (TEC) in 2009 was 75% full-time to 25% part-time. This is different from the percentages found for full and part-time DHI students in this study. The results from this study however, do correspond with the percentage of students studying part-time and identifying as having a disability (66%) in the TEC Annual Report (2010). The high proportion of students with less than a full study load or part-time students might relate to the number of older students in the study, as in the general population they are more likely to study part-time while working (U.S. Department of Education, 2010), or it might relate to their hearing status.

Therefore, I explored this further in the qualitative section of the research and this is discussed later.

Accessing the curriculum

In the main, the 85% of participants who had accessed the disability support services to access the curriculum, including notetaking, interpreting, and alternative assessment accommodations, reported high levels of satisfaction. Of note, however, were 38% of respondents who said they found the disability coordinator only ‘a little useful’ or ‘not at all useful.’ Participants explained reasons for this in their qualitative written responses, and I explored these reasons further in the qualitative interviews. In contrast, it was pleasing that many respondents reported a high level of satisfaction with both the teaching they received and the attitudes of staff and students in the learning environment. This result did not reflect the findings in earlier studies (e.g. Foster, Long & Snell, 1999; Hyde *et al.* 2009; Komesaroff, 2005) in which students identified their dissatisfaction with staff whom they felt did not make sufficient accommodations for their needs.

Forty-eight students (75%) in this study used hearing aids in their day-to-day life. Further, 95% of this group reported using their hearing aids ‘quite a lot’ or ‘a great deal’ while at the tertiary institution. This pattern of hearing aid use, suggests that the use of auditory-oral communication may have been a factor in these students reaching admission to tertiary education, given the current lack of interpreters within the compulsory education sector in New Zealand. It is noteworthy, that only 13 (21%) of these students had used FM systems as part of their tertiary studies, and only five students found the FM system ‘very’ or ‘extremely’ useful. This reflects findings from a previous Australian study that identified a similar lack of use of valuable FM systems in tertiary settings. “Despite the compactness and convenience of the current FM

models, as opposed to the more bulky models they have used at school, most students are unenthusiastic about trying them again” (Spadbrow & Power, 2004, p.210).

Three people in this study had cochlear implants, although only one person said they used their implant during their studies. Given the high rates of implantation in New Zealand, for example, 100% of profoundly deaf children born in 2008 in the Southern Cochlear Implant Programme area have had implants (N. Heslop, personal communication, 16 February, 2009), and the expected increase in numbers of students undertaking tertiary education with cochlear implants, it was vital to examine the reasons for relative lack of implant use reported in the current study. Some analysis is included from the written responses and in-depth interviews.

With new forms of technology available to support learning and communication in tertiary education, it was worthwhile to investigate whether students were able to use such tools as electronic notetaking (C-Print, Stereotype), or videoconferencing. Both have strong potential for use with this population (Power & Power, 2010; Stinson, Elliot, Kelly, & Liu, 2009). However, it would seem clear from data gathered here that these were not in common use at the time, with only 21% of respondents using electronic notetaking, and only 13% using videoconferencing. However, those students who did use electronic notetaking 75% found it ‘very’ or ‘extremely’ useful. Whether the lack of use related to the lack of availability of these technologies in institutions, or students’ lack of experience with their use, was explored further in the face-to-face interviews. The most frequently used forms of technology were the software Blackboard, seen as either ‘very’ or ‘extremely’ useful by 70% of students using it, and email, used as a means of communicating with staff or classmates by 85% of students. Eighty percent of email users thought that it was either ‘very useful’ or ‘extremely useful’ in that context. This reflects findings from recent research that identified electronic communication technology usage among deaf Australians.

Level of education was related to differences in use of electronic communication. University or college graduates reported significantly higher use of most services than did less educated groups... University and college graduates also used e-mail more than the other groups for sending and receiving business and job-related messages. (Power, Power & Horstmanshof, 2007, p.89)

It must be noted that all students, not just those with an impairment, use both Blackboard and email, but the high level of use and perceptions of usefulness shows what a valuable tool this is for DHI students.

Students in the current study indicated the extent to which they believed that their hearing loss affected their ability to participate in specific learning environments. The highest levels of reported difficulties were in lectures and social functions, which mirrors findings in previous studies (Schroedel, Kelly & Conway, 2002; Stinson & Walter, 1997). Students indicated they had difficulties in tutorials as well as lectures, and most respondents had revealed that receiving instruction and supervision was affected at least 'a fair amount.' DHI students' use of residual hearing combined with hearing aids, cochlear implants and lip-reading, enables these students to appear to cope well in favourable listening conditions such as quiet environments, or one-to-one situations. However, they may struggle when attempting to access content in lectures and tutorials where listening conditions are less than favourable, such as tutorials where group work is often used as a learning activity. Spradbrow and Power (2004) surveyed 18 DHI students at an Australian university, in which three-quarters of participants felt that they were missing some of the content of their lectures and tutorials, despite having access to notetaking support. Participants in this study expanded on the reasons for the

difficulties they were experiencing in their qualitative responses, and these are described in the following chapter.

The least affected environment, according to these students, was their ability to access support services; however, students rarely availed themselves of the generic institutional services such as counselling, career advice, and welfare services. The exception to this was use of the learning assistance service by 25 students (39.1%), and of those, 12 students found the service ‘very’ or ‘extremely’ useful. Given the difficulties that DHI students often have with literacy at the tertiary level (Allen, Rawlings & Schildroth, 1989; Cuculick & Kelly, 2003), it is not surprising that this was the service most frequently accessed and seen to be most useful.

Very few students, however, accessed other generic services. Fifteen (23.4%) indicated they had availed themselves of personal counselling, 11 (17%) had received career advice, seven (11%) welfare services, and 14 (21.8%) had accessed student associations. These students rated most services poorly in terms of their usefulness. This finding raised questions about why DHI students were not accessing services that had the potential to make their experiences within the tertiary education sector less of a challenge. Further, given the acknowledged difficulties experienced by DHI students with career development (Punch & Hyde, 2005) lack of use of these services is of concern. Perhaps anticipated communication difficulties or a lack of knowledge about what the services provided was a factor, and these aspects are examined further in the interviews.

Social Integration

Crucial to the success of students in higher education is their level of satisfaction with the social parameters of their lives and, DHI students are not different from hearing students (Hyde *et al.* 2009; Lang, 2002; Lehmann, Davis, & Laurin, 2000; Stinson &

Walter, 1997). A major finding in the quantitative section of this study was that students indicated difficulties with both social and academic interactions, reflecting the findings of Hyde *et al.* (2009). In addition, they indicated feelings of dissatisfaction with the impact that their hearing loss had on their ability to participate in social functions, and the number of friends they had outside class. Some students also expressed dissatisfaction with the number of friends they had in class, with those between 20-30 years of age expressing the most dissatisfaction.

Kent (2003), examined identity issues among 52 mainstreamed DHI and 470 hearing New Zealand secondary school students. A large number of these DHI students said their educational experiences were negative and not supportive, and they reported feelings of loneliness and bullying. Kersting, (1997) reported considerable feelings of isolation, loneliness and resentment among 10 mainstreamed deaf students at Rochester Institute of Technology, particularly during their first year of tertiary study. They reported experiencing rejection from deaf peers and discrimination from hearing peers.

The social aspects of mainstreaming from the perspective of deaf college students indicates that for some students, social adjustment to college is complicated by experiences of separation and alienation from both deaf and hearing peers.

(Kersting, 1997, p.252)

Given the indications from the quantitative findings in this study regarding the students' low levels of satisfaction with their social interactions, the qualitative responses and interviews examined more fully aspects of the students' social integration, and I discuss this in the next chapter.

Summary

This chapter has reported the quantitative data from the written survey phase of the study. These quantitative findings provide a snapshot of this group of DHI students attending tertiary institutions across New Zealand and provided some information about their academic and social experiences.

Participants in this study reported a mainly oral/aural education within mainstream classrooms during their primary and secondary schooling, and the majority continued to communicate via speech and lip-reading, at least as part of their primary means of communication, after leaving school. Nearly two-thirds of respondents indicated a severe or profound hearing loss, and most students reported that they used hearing aids as part of their everyday life. As indicated earlier, this could suggest that the higher use of auditory/oral skills may have been a factor in reaching admission to tertiary education for this group of students in the prevailing circumstances in New Zealand, which included a low level of support in mainstream schools. The majority of secondary school students did not receive RTD support, although given the severe/profound level of hearing loss many experienced, they may well have benefited from more specialist assistance. Results further indicated that students were choosing programmes that reflected their own interests and abilities, and that the majority were studying either part-time or in a 'limited full-time' capacity. There were also a remarkably high percentage of older students, with over half of the respondents over 40 years of age at the time of the survey.

In terms of satisfaction, most students said they were very satisfied with the support and services they received, as well as the overall attitude of staff and other students. This was in contrast to findings in earlier studies, and was an unexpected result, which seemed to be at odds with the difficulties students in this study had identified earlier relating to their accessing of information and communication. The high uptake and

usefulness of academic accommodations was another valuable finding and students expanded these aspects in their qualitative responses.

Several issues arose from the quantitative findings that I needed to explore further in the interviews to understand more fully the meaning of the results. These included the reasons for the high proportion of part-time DHI students and the high numbers of older students. Additionally, understanding the reasons respondents said they found the service of the disability coordinator only, 'a little useful' or 'not at all useful,' and why students rarely accessed generic services, needed further exploration. Turning to academic issues, a finding that required further investigation was how well participants felt they were prepared for the demands of tertiary study. Finally, social aspects that needed further follow-up included identifying why students' levels of satisfaction dropped for both the number of friends in class and the contact they had with other students outside class, when they had previously reported that they were satisfied with the attitude of other students.

The qualitative findings from the open-ended written responses and the in-depth interviews provided a deeper understanding of the issues, elaborated on the quantitative findings, and extended the depth of understanding available about the learning and social participation of this particular population and are discussed in Chapter 5.

CHAPTER FIVE – RESULTS AND DISCUSSION OF QUALITATIVE DATA

Introduction

This chapter first reports the results of the qualitative analysis by grouping findings under categories reflecting the major research questions designed to examine the social participation and learning experiences of DHI students in New Zealand tertiary education institutions. There was a high-response rate to the open-ended questions in the questionnaire, with all respondents writing about their challenges and highlights in tertiary study, and nearly all provided advice for other DHI people considering tertiary study. The eight in-depth interviews explored written responses and findings from the quantitative data in detail, and provided richer understanding of the issues involved.

In reporting the results, I have used direct quotations from the open-ended written responses (indicated by the symbol ↗) and interview data to contextualise and expand on the quantitative findings and themes that emerged during analysis of discourse from participants. I combined these with the use of *thick description* (Geertz, 1973, as cited in Yin, 2011) to encourage as full an understanding as possible of the experiences of students represented in the study.

A discussion of the qualitative results follows, and considers how these findings relate to, and extend upon, findings of the quantitative phase of the study.

Results

Characteristics of interview participants

The characteristics of the survey respondents, whose open-ended written responses are included in the qualitative analysis presented here, have been described in Chapter 4. The major part of the qualitative findings derives from the interviews with eight participants. I selected these eight participants considering such variations as hearing

loss, year of study, cultural identity, and geographical spread. Details of the interviewees are shown in table 8.

Table 8

Characteristics of Interviewees

	Hearing Loss	Primary language/s	Hearing Aid/CI	Cultural identity	Level of study
1	Profound	NZSL	-	Deaf	Postgrad
2	Severe	English	H/A	Hearing	Postgrad
3	Severe	NZSL/English	H/A	Bicultural	Undergrad
4	Severe/profound	English	H/A + C/I	Hearing	Undergrad
5	Severe	NZSL/English	H/A	Deaf	Undergrad
6	Moderate	English	H/A	Hearing	Undergrad
7	Moderate/severe	English	H/A	Hearing	Postgrad
8	Profound	NZSL	-	Deaf	Undergrad

Interviewees ranged in age from 17-44 years. Four came from families that had no other incidence of hearing loss. One had a family history of hearing loss on their mother's side, another had a deaf sibling, and two interviewees came from Deaf families.

Students' sense of identity

I asked the interviewees questions designed to delve more deeply into the ways in which they viewed their identity. Frequently linked to a sense of identity is the language people prefer to use when they communicate with others. Among the interview participants, the mode of communication within their immediate family varied. Some used oral communication modes, including the person with hearing loss.

Every time Mum spoke to me she would get down to my height and I taught myself to lip read by the age of two! That was the only way I could work out what was being said or going on. My family all speak and I'm ok with that because I don't sign....

Others came from Deaf families who used sign language to communicate.

When I was growing up, I wasn't really sure what Deaf meant as such. I never really thought about Deaf as a concept - my family just signed. My aunts and uncles all signed. There were other people who moved their mouths.

There were also people who preferred to use sign language, but their families preferred oral communication modes.

My sister is also deaf so we'll sign to each other and talk a bit but now we sign we don't talk together. The rest of my family for example they can't sign, so I'll talk and they are used to me talking. They don't know any sign language at all. They basically won't learn, or can't learn or don't have time.

Finally, there were those who used a mixture of modes.

Mum learnt a bit of signed English when I was growing up but hasn't used it much since I was about 10. My sister signs a bit. Dad didn't sign much at all. So, I mostly speak at home, with a bit of sign.

When referring to identity, researchers and educators place much emphasis upon the terminology used to describe people with hearing loss. The interviewees used a range

of terms to describe their own hearing loss and its relevance to their perceived identity and functional communication. Only one respondent used the term hard of hearing when referring to his own hearing loss. This was explored further with the interviewees, as *hard of hearing* is the term which is seen to be preferred in other countries, and is almost always used in recent literature. There seemed to be quite a strong belief among the group that the term, hard of hearing, referred to older people. In addition, these New Zealand students saw it as a very 'American' term.

Hard of hearing is more for older people, so a person was born hearing, grown up, and at a late age have a hearing loss. In NZ, we don't really use the term hard of hearing much. On the back of DVDs, you'll see it had Deaf and HI for hearing-impaired. Hard of hearing, I certainly don't use it much.

The one student, who did refer to himself as hard of hearing, grew up in the UK and spoke about the terminology in this way:

I term myself as 'hard of hearing'...as not really involved in the Deaf community. Though often when explaining to people, it's just so much easier to initially say, "I have a hearing problem, I'm deaf." and then just go from there as the hard of hearing label takes some time to explain. I am not very fond of the hearing-impaired term, but am OK with hard of hearing.

A number of the students indicated that their identity had changed over time. For most, these changes related to experiences they had encountered in their later high school years or initial years of tertiary education, when they had met and interacted with students who identified more as linguistically and culturally Deaf. One severely deaf student, who had attended a university with a large number of Deaf students in the UK,

spoke of being a “social-cultural chameleon”. This aligns with the understanding that everyday interactions and practices people experience shape a person’s identity as his comments illustrate.

OK...personally speaking prior to studying (at University) I just termed myself as 'Me.' During, and after the course I very much changed into then more of a radical Deaf, with a capital 'D' - though that is attributable more to the people I was mixing with...Now, some years later it has once again changed to a more meekly accepting hearing-impaired. So, yes I am a kind of 'social - cultural chameleon'I started to learn sign in early 1997, but only really met my first Deaf person when I went for an interview for the course. From that initial interview, and subsequent acceptance, I was placed in most classes with other Deaf people who DID use sign - that is how I learnt it - by socialising lots with them...immersion is always the best way to learn any language I reckon. So for two years on the course I 'hang out'[sic] with them all, and in the final year, and for year after, I shared a Deaf flat with various 'Deafies' from all over the world.

Another profoundly deaf oral student acknowledged that she was aware of changing the way she acted around other deaf people, but did not think her actual identity changed at all.

Really, I haven't changed my identity. Most people I get around with are hearing so on the odd occasion when I do meet deaf people, I might change slightly, just because I feel like I have to deafen myself up... act more deaf because they do... because they're deaf with a capital D for Deaf culture.

Academic readiness and the transition to tertiary study

Several themes emerged during the data analysis relating to how well prepared students felt they were for tertiary study. In this section, I will discuss pre-admission factors identified, such as prior schooling, personal skills, and abilities, parental and teacher expectations, career knowledge, and transition from secondary to tertiary education.

The majority of participants had attended regular schools for their primary and secondary education, as would be expected in New Zealand where an estimated 90% of DHI students attend regular schools with support from an RTD and/or an AODC. Interestingly, the quantitative data revealed that 60% of students in this study did not have regular RTD support during their secondary schooling. For some students, it was their choice not to have this support, and for others, a RTD was not offered as a service to them because either their hearing loss was not considered significant at the time, or they may have lived too far away for teachers to travel to regularly. One profoundly deaf student had this to say when asked why she chose not to have itinerant support, “I did have one for about a month on trial in the 6th form, but I didn’t like it, so I said no”. Another student with a moderate hearing loss who had been home schooled for several years, talked about the inadequacy of RTD support she received and the impact it had on her schooling, “I had a hearing advisor who came in once or twice a term but no ongoing support. If I had that support, I wouldn’t have had to be home schooled”. Some students, whose hearing loss occurred later in life, did not require support during their primary or secondary schooling.

A theme that surfaced strongly from the data, was that teachers and careers advisors were not as helpful or supportive as they could have been, regarding future academic study. The following comments illustrate the expectations of teachers, particularly towards their students’ academic futures.

They have low expectations. University is not seen as an option. I wanted to go to university, but the teachers didn't talk about it or encourage it. It was just myself. ✍

When I was at high school some of the teachers said I couldn't go to university because of my hearing disability. That pissed me off and I thought, "I'll show you!" ✍

This contrasts with the reported expectations of family and friends where, in the main, the expectations were far more positive. As one student remarked, "University has been an expectation ever since I was born I think". One profoundly Deaf signing student who had experienced a year in the American education system, found the expectations of teachers and friends markedly different from those she experienced in New Zealand. There was an expectation that deaf students would progress to tertiary study in the same way as their hearing peers, something she did not feel was the 'norm' in New Zealand high schools. Some participants, however, did feel that some teachers and counsellors were instrumental in helping them prepare for tertiary study, but only in practical ways such as supplying information rather than academically.

The majority of students gained entry to university through their secondary school national exam qualifications and as such, considered their prior academic learning as reasonably successful.

At the time, I wasn't so sure, but after going to uni, I realised that high school really did help. A lot of the first year papers I did, I realised that high school covered most of the info! So yeah, I think doing high school right up to year 13 did help.

Others spoke of working hard to gain academic levels that were necessary for entering tertiary study. Several students highlighted parental input and clearly, this played a significant part in their academic success prior to tertiary study.

Mum spent a lot of time with me making sure I understood topics and working on my writing skills. ✍

The majority of students made decisions about which institution to attend based on practical aspects. They indicated that they had chosen the institution because it had courses they wanted to study, or it was close to home and therefore, transport was easier. Having support services for DHI students or knowing other deaf people who had studied through that institution accounted for a small number of participants.

At the time I enrolled, there were other deaf people studying there, although this is now no longer the case. This University has had a number of deaf graduates however, some of whom graduated while I was studying here.

It's important to pick the university for the course you want to do and secondly, for the services available to deaf students. ✍

Two students indicated that their choice was related to the fact they had won a scholarship to attend a specific university, and that had been a deciding factor in their choice.

One aspect of successful and meaningful transition from secondary school to tertiary education is an understanding, or knowledge about, different careers and preparation for tertiary study. Many participants reported receiving little or no advice about building a degree that would be beneficial to a career path, or knowing what to expect, or how to access appropriate support. In hindsight, students had this to say:

I definitely wasn't prepared at all. I didn't know what was going to happen.

I had just left school so I hadn't really found my path I don't think and I was just carrying on doing something that I enjoyed. It wasn't a really good year for me.

I suspect that many people do this, but for myself I regret now that I didn't choose a course that will benefit me career wise. But it does not mean I didn't enjoy doing my chosen subject rather I feel I didn't choose wisely. Not really a career orientated plan of the degree planning structure that I had undertaken. ✍

Students reported that prior to undertaking tertiary study they felt academically prepared, but found that the reality, once they commenced their tertiary education, was somewhat different. Many students knew what teachers expected of them in high school and knew how to be academically successful. Comments such as, “I needed to work much harder to get the same results” and, “[It] was difficult to find my studying habits and studying style” or, “Studying independently – there was no one I could look to for a while”, were typical of many responses, and illustrated some of the differences that exist for all students between secondary and tertiary study, not just those who have a hearing loss.

Individual background experiences, language and communication strengths and needs, learning characteristics and personal goals of DHI students can vary widely. The data analysis identified some factors seemingly outside the general transition concerns of all students; factors that related specifically to the fact the students had a hearing loss. For example, negotiating effective relationships with their lecturers and tutors became more of an issue, due to difficulties with communication.

At [school], I had a lot of assistance, like I could ask questions. More one to one work and discussions with people and that was fine at school but didn't happen at uni.

I worried about lectures where it would not be possible for me to ask a lecturer to repeat themselves or ask a friend to explain to me what the lecturer said, which I commonly did at high school, and this did present as a significant problem. ✍

Students also indicated they felt their high school teachers had been far more accessible before, during, or after class, than lecturers and tutors at the tertiary level, who often required appointments. This created a problem for students who used sign language interpreters, as finding times that suited everyone was often difficult. Additionally, some support services required prior approval to fund extra interpreting time, and consequently students often tried to 'go it alone,' or use alternative methods of communication.

Another theme that became apparent in the qualitative findings was the need to be more independent and proactive in order to receive appropriate services or accommodations. No longer could students rely on services provided or organised by a staff member specifically employed to assist them. In the tertiary setting, receiving appropriate accommodations depended very much on the student knowing how to access particular support services, and having the ability to self-advocate.

Ummm, well at school things were a bit different. There was a disability support person so she did everything. Where as, at university I had to organise everything.

You have to be more responsible and independent when you go to university. You can't rely on the itinerant teacher like you do at primary, intermediate and high school.

The majority of students did not see it as appropriate that parents take this role. However, some students mentioned parents taking an active role to ensure adequate support for communication and learning. One respondent spoke about how she and her mother took matters into their own hands, when a tertiary institution was less than helpful obtaining a sign language interpreter for lectures.

Mum had contacts with some interpreters and so at home she faxed out to the interpreters and so we took it on as our own responsibility.

Another spoke of her mother's intervention, in order for the student to access appropriate resources and support.

Well I had to prove I was deaf. So I didn't really like them at all. Mum had to come in with me and I had to bring along my audiogram. And each year they say, "Are you still deaf?" I feel like saying "No I'm not any more it's a miracle."

The quantitative results had revealed a large number of older students, indicating that they had not come straight from high school to tertiary study. I asked the four older interview participants questions, to determine possible reasons for this phenomenon. Some students had initially attended tertiary study and failed because they were not properly prepared for academic study. One student failed many of his first year papers when he attended university straight from school and withdrew from tertiary education. When he returned for 'another go,' after having been in the workforce for several years,

he found he was much better prepared for his second tertiary study attempt. A Masters Programme student spoke about her life experience and the difference it made to her studies.

This time I was more prepared. I had life experience, teaching sign language and I also had plenty of contacts and networks. In my B.A. they would be talking about history with Pacific Island people and I was thinking...so what's this got to do with me? Now I've been to some of those places I can have that link to real life experiences as well. That helps me to have links to what was being said in class.

In addition, there were a significant number of the total survey respondents undertaking postgraduate studies (24%) and who were older, simply because they were at a different stage of their academic career. For others, it was because they had not had the qualifications required when they left school, and had only started their tertiary studies after some changing circumstances, such as redundancy.

I thought I would never go to university because my education was not good enough. After my job finished a friend told me to go to university to have a go. So university is better than school because [it] is different [than] at school. There is lots of support for me. At school, there were many barriers. ✍

Accessing the curriculum and support services

In order to complete an education programme successfully, students need appropriate access to the curriculum. All the institutions in this study provided support services, upon request, through their generic disability support offices to facilitate access to the curriculum. Tertiary institutions in New Zealand make their own decisions about the

level and type of support they provide to students, based on determined need and the funds they have available. It was clear from the data, that some institutions were more proactive than others were, when ensuring that DHI students were receiving appropriate and adequate support.

They are very good at supporting their students at least in my experience and almost everything I've asked for I've got, and if I didn't get it, there has been a good reason- like lack of interpreters.

I had awesome access with interpreters and notetakers, they were very valuable to me and enabled more learning for me during the classes, activities, and camps. ✍

The qualitative findings indicated that the ability of students to advocate on their own behalf and knowledge of how to access services, were critical factors in improving their tertiary education experience. There was a feeling among participants that if they did not ask for services, they would not be offered.

I mean a friend of mine was saying 'oh there's no interpreters' and I was saying 'why don't you talk to the office?'. They sort of felt like they were hassling them or annoying them and I just said 'just go along' and they didn't want to fail their papers. They knew it was the office's job to do it but you have to be assertive to get them on to doing it. A lot of deaf people sort of just stand back. They don't want to make a fuss.

Students who had recently commenced their studies provided responses that were more positive, possibly due to an increased awareness of equity issues among disability support services. Some institutions provided an extensive range of support including:

extra time for exams, loan equipment, copies of lecture notes or handouts, learning support, awareness training for lecturers and tutors, advocacy and individual tutoring services.

Three students in this research were undertaking distance (extramural) study, and they explained the benefits they found accessing the curriculum in this way. Benefits included the fact that they did not need to worry about hearing the content of lectures, and could use the internet to converse with lecturers and fellow students. If these students did need to attend on-campus or block courses, they had the same access to support as students studying internally. I purposely interviewed one of these extramural students, as he had previously studied internally for his undergraduate degree. I felt he might be able to provide some insight into the differences between the academic and social experiences DHI students may have when learning takes place on-campus compared to off-campus experiences.

Really, it's what you make of it. Support wise - just means you have to be a bit more organised as you can't just 'pop' into the office. Last year there were a number of us who were doing the same papers, and as I really missed the face-to-face interaction aspect of it, I suggested to some of us to stay in touch via email. Good use of tech eh? So, what we did last year was exchange thoughts about assignments, resources, and swapped assignments, was good fun.

Tertiary institutions provide generic support services such as counselling, welfare services, or student associations for all students, but among these participants, rates of use were not high, and ratings of the various services' usefulness were also low. Further exploration revealed several reasons for this, including the lack of knowledge about what the various services provided. Some students felt it was easier to obtain

information through people they were already comfortable communicating with, as this student's response illustrates.

If they're explaining it to you and you're just nodding your head and going yep, yep, I hear you and then the conversation's over and you don't know what they were talking about at all! So, I prefer to talk with people who I can communicate well with, like the disability coordinator. They can usually get the answer for you, which is less stressful for me, and quicker most of the time.

The generic support service accessed most frequently by students in this study was learning support, which assisted them with time management, study skills, academic writing, and literacy. Low literacy levels and difficulties in successfully understanding written academic material have been ongoing concerns in the education of DHI students. In this study, there was very little mention of difficulties with general literacy raised by the students themselves, and the written responses to open-ended questions demonstrated reasonable literacy levels. However, there is a difference between general literacy and academic literacy, and a number of students acknowledged difficulties with academic reading. Specifically, students spoke about the difficulties they experienced with English syntax, and described experiencing embarrassment when their lecturers or tutors commented on their writing skills. In addition, students felt penalised harshly for their grammatical mistakes.

I did not expect the lack of understanding in my assignments. Especially where I have missed endings of words or important words like "the" are missed out. I write like a deaf person.

Some participants seemed to base at least some of their success on strong literacy skills, and felt this allowed them to ‘keep up’ when they missed information in class. Comments such as the following were common.

As I wasn't really clued up on what was happening. Basically, I just became a bookworm and learnt all my subjects by reading copious amounts. ✍

Participants indicated that their hearing loss affected their ability to participate in tutorial sessions, which are often interactive, and require students to respond to ideas and questions. Group work and discussions are very much part of tutorials and therefore, pose particular difficulties for DHI students. A typical response was,

I struggle with group discussion, I always have. I just make sure that I know who is speaking. It is more of a challenge when it's not well controlled and people are dancing all over the place.

As well as missing the content of lectures and tutorials, students reported missing significant informal information such as exchanges that occur between hearing peers about, study tips or instructor expectations.

I'm always missing out on in and out of class dialogue between students and even if I am included, it is difficult to keep up the rapid flow of conversation – so I do a lot of guessing, lip-reading, filling in the gaps.

Use of assistive devices may also affect students' ability to participate, even though they may provide better access to the curriculum, as this student described.

During the time I was using the FM headset I found it was a bit anti-social. I could hear the lecturer perfectly well but if any of my student colleagues

talked to me, I couldn't hear them and would have to pick up on the visual cues that they were talking to me and remove the headset. I did miss some of the discussion or clarification that went on about the lecture among the students. ✍

Turning to specific disability support services, the most frequently used by DHI students in this study were notetakers and interpreters. These forms of individual support are the most limited and expensive provided in New Zealand institutions. However, without one or both of these services being available, dependant on need, accessing the curriculum became virtually impossible for most students in this study.

Notetaker services

Different institutions provided different levels of notetaker services, ranging from those who provided trained and dedicated notetakers taking notes for DHI students, to those who seemed to believe that providing photocopies of existing notes of a peer enrolled in the same course was acceptable. The provision of peer notetakers was by far the most commonly used option for students in this study, and several issues arose from the qualitative data about this service. Firstly, there was usually a delay in finding appropriate people to fill the role of peer notetaker, which could cause problems, as described by this student,

I'm very dependent on notetakers so when no notetaker is available (usually the case at the start of semester or for labs – disability support seems to have a lot of trouble finding notetakers for labs) I struggle to understand as I hear very little of what is said. ✍

Even when students had peer notetakers identified and provided, the reliability of receiving notes in a timely manner, and their relevance to the student's academic progress, was another issue.

In my second year, I was doing law and none of the lecturers had PowerPoint. So, I relied heavily on notetakers and the notes would come a month late or not at all. Not surprisingly, I failed all my law topics.

In addition, the quality of the notes varied widely. Some students found the service invaluable, while others felt it was a service provided because it was required, but was not of a high standard. They reported a lack of professionalism on the part of notetakers, and the sometimes inadequate and subjective nature of a peer's own notes. The few students, who had dedicated notetakers, felt they were receiving a superior service and one tailored to their particular support needs, rather than simply a generic service. Several students had the option of electronic notetaking (ENT) rather than manual notetaking, and overwhelmingly these students preferred the electronic service. Related to this outcome seems to be fact that those who received ENT had real-time access and a dedicated support person. Some students expressed their preference for ENT over interpreters.

I was amazed to discover that I actually preferred his electronic notes over the NZSL interpreters – I'd get tired looking at them. I mean, some classes ran into two hours, and it's just exhausting looking at interpreters for that long.

Additionally, students felt electronic notes contained more information and provided a better flow of lecture material. Further, students had the ability to enter their own notes

alongside on linked laptops. A Deaf student expressed this about the usefulness of having access to interpreting and electronic note services concurrently:

So something I have seen from the interpreter, I can then see in English and change it to a clearer level of English for me.

The costs of these services, however, often meant that coordinators asked students to choose between having an interpreter or an ENT.

I was told that I couldn't have an electronic notetaker and an interpreter at the same time but I definitely prefer both. The more options I have to learn the better, basically. I prefer to gather the information through sign language but then at home I can read the information. Otherwise, I would only be gaining the information through reading.

Sign language interpreting services

Students who preferred sign language as their main mode of communication, featured in this study, including some students who had grown up as non-signers. Comments such as the following were typical,

I prefer sign because English is my second language. I can read it, sure but I'd like to do that at a more relaxed pace later after I have the concepts and the meanings from the sign language.

Participants referred to the lack of available interpreters, and a regional variation was obvious from the data. Students studying in Auckland or Wellington seemed to have the best availability of interpreting services, and this coincides with the larger population of trained interpreters in those two cities.

Barriers that are still present today is (sic) mainly the interpreter shortage which the Disability coordinator obviously can't fix in the short term. ✍

It is difficult to get an interpreter for some of the more unusual time slots – such as 8am or 6pm classes! [It's] even worse for group assignments. The meetings can sometimes be of the ad-hoc variety, making it nearly impossible to organise an interpreter beforehand.

The problem of not enough interpreters to meet the demand at this level remains, even in larger populations, even though students said the tertiary institutions did attempt to secure interpreters for those who indicated their preference for this form of support. Two Auckland based students made the following observations about the coverage they received:

Until the end of last year, about 95-100% of my classes were interpreted, the other 5% were electronic notetakers. This year it's dropped to about 80-90% interpreters and 10-20% ENT. I prefer interpreters, so when they can't provide that I don't really consider that 'coverage.' ✍

There were interpreters for some things and not others, so about a third of my lectures I would have missed out on interpreters for. That has easily affected my learning.

Others spoke of the differing quality of interpreters available, and the interpreters' ability to interpret adequately at the tertiary level. Students felt this was mostly due to two factors, the interpreter's own skill level, and/or interpreters themselves not having the necessary levels of education to interpret accurately. Interpreters obviously do vary

in their skill level, style, and effectiveness in various situations, as these participants explained:

Having interpreter issues come up throughout my time at university wasn't that surprising, as that was expected, but what I didn't anticipate was that the abilities of the interpreters would come into the picture. It was continually an issue, especially at the beginning of each semester. In more than a few cases, I'd have to put up with a new graduate, who was completely incapable of interpreting at a university level. It was at those times that I often thought there was no point in having an interpreter, as the notes I was receiving from my notetakers were often as good, or even surpassed, the information I was getting from my interpreters.

I thought that there would be difficulties in the quality of interpreters for my area of study – law and arts. For example, interpreters not having degrees themselves, or not knowing the jargon, no signs having been developed. But, I had no idea just how difficult it would be!

Although some students saw use of ENT as a solution when interpreters were not available, institutions did not routinely provide it as an alternative. The following comments show how students felt about not having accessible lectures.

One paper I went to no classes at all. I just got the notes and I just read those and I passed the paper. For me to sit through the lecture without an interpreter meant I wasn't getting information. If it's something practical then that was fine but if they were just talking then...yeah...

I found the classes boring when I didn't have an interpreter. I would look across at the notes now and then but you know the amount of time I spent on the bus getting there... I asked them to just fax the notes to me because I wasn't getting anything out of the lectures and they said that it couldn't be done that way so I had to travel for an hour, sit for an hour in class, pick up the notes and then just read and catch up when I got home.

One student, whose primary language was NZSL, had another Deaf student in her class and they found a different solution to the boredom of a lecture that was inaccessible without an interpreter.

But in the other class we had together we had no interpreter so we would just talk all the way through because we knew that sign language didn't make any noise and lecturers would look up every now and then and we would be yakking away signing to each other in the middle of the front row. They probably thought we were talking about the class.

One fourth year student reported that she had a lecturer who gave his own time outside of class, so she could access the information when no interpreter was available. The student would meet her lecturer for half an hour, instead of attending the lecture herself, and felt this was a terrific alternative.

Tutorials posed a difficulty for students using an interpreter as they often experienced 'processing time' in receiving information. By the time the DHI student has received all the information required to respond, the instructor may have asked someone to answer the question and then moved on to the next section.

It was really hard. If there was an interpreter there, it was better but it was still hard anyway because of the large amount of discussion and the

interpreter would say 'oh hold on, what was that?' and they needed to interrupt a lot to keep up... Small groups or pair work was ok. If there was a group of 15, then that was really hard [for me] to understand and a nightmare for the interpreter.

Finally, there was an overall acknowledgment from these students of the importance of having professional interpreters and notetakers, summed up by the following comment,

Finally, getting full-time interpreters and proper paid notetakers for the last two years of study made such a big difference and I was amazed at how much info I had missed out on previously. ✍

Academic staff

Accessing information from lectures and tutorials, for those students who did not use interpreters, depended largely on the willingness of teaching staff to make appropriate accommodations that took into account the implications of the student's hearing loss. Many students in this study received support and understanding from the teaching staff and appreciated this.

The lecturers were welcoming and had a positive attitude about having a Deaf student in their class. Some of them go out of their way to talk to me and the support staff to find out what they can do better etc. ✍

Some teaching staff had some awareness about deafness and agreed to provide alternative ways to meet course criteria, as in the case of a student who was majoring in music. The student presented his audiogram to the Head of Department who "didn't really understand what he was looking at", but realised the set task was not achievable

and devised an alternative way for the student to meet course requirements. However, students also spoke about the lack of knowledge staff had about deafness.

[They] would refer to having a deaf student equivalent to one with another disability, “Oh yes, I’d be happy to accommodate you, I had a student with a wheelchair in my class before”.

Study participants identified the need for more “deaf awareness” training within the tertiary educational setting, as they felt they had to advocate and educate staff on their own, as these students’ explained.

I made efforts to tell lecturers and tutors that I had difficulty hearing and explained how they could help. Many of them were great, and very considerate, and just as many ignored everything I said, and didn't care about anything I told them.

No Deaf Awareness [is] delivered to course tutors, they did not understand about Deaf students’ needs i.e. getting attention, face-to-face communications, Deaf people's literacy barriers, when is the right time to interrupt the conversation, way of teaching to Deaf students (i.e. visual, etc)

✍

Misconceptions about accommodations that could assist DHI students’ access to both content material and participation, included a lack of understanding that supports, such as interpreters and notetakers, did not necessarily provide full access to the course content material or to other learning environments such as tutorials. Further, participants made the point that many lecturers did not understand the importance of lecturing in a style accessible to students who relied on lip-reading. Common flaws

identified included lecturers' unwillingness to wear an FM microphone, or moving around a lot while talking, or showing DVDs without subtitles. Issues such as demonstrations of physical manipulation of objects where students must choose to watch the demonstration or the lecturer (if they rely on lip-reading), or the interpreter (if they are signers), creates a conundrum for the student. This highlights the importance of staff understanding that students cannot attend to both simultaneously, and that their teaching style needs to be adapted. Additionally, lecturers who did not understand the importance of interpreters having lecture material ahead of time to allow for adequate preparation was an issue for students who relied on this mode of access.

Unfortunately, it seems most lecturers like the flexibility of changing the info right up to the last hour before the lecture starts so that's why they release the slides etc same day -- which annoys the interpreters a bit!

Students also recounted many positive experiences they had with tutors, administrative and support staff that they identified as taking extra time with them, and making a concerted effort to communicate.

Since I found it very difficult to hear explanations given by tutors during physiology lab sessions without any notetakers present, one lab tutor very generously spent up to an hour after each laboratory session explaining everything in detail so that I could succeed in writing my laboratory assignments.

Disability Support Staff

All respondents in this study were registered with the generic disability support services of their institutions. Several key issues emerged from the qualitative findings including, accessibility of services, attitude of staff, communication with staff, and the

knowledge that staff had about the needs of DHI students. Participants spoke about the differences between the specialised advisory support available in the compulsory school setting and those available in the tertiary setting. The students felt that there was a need for specialised knowledge among support staff, or even a dedicated advisor. They also identified that the ability to communicate freely with disability support staff was essential, but often difficult to achieve.

At school, I had the same advisor from the time I started school. If you're in education it shouldn't matter if your primary, secondary or tertiary you should still have the oversight of somebody who actually understands what the issues are, someone who knows about deaf people, not just someone who works in the disability area.

Some students advocated for a Deaf staff member as a way of reducing communication problems. A Deaf student, who attended a large institution with a number of other deaf students who communicated using NZSL, had this to say,

They were helpful in their own way, but there should be a Deaf staff member. More than often, I'd get patronising vibes from the Disability Department, which was quite disconcerting. Hardly any of them know any NZSL (I mean, come on!). All of our correspondence was mainly through email, or via pen/paper. ✍

Other students reported positive experiences with the disability support staff, and were happy with the support and services they received, making comments such as “The support also has been overwhelming” ✍ and “There are people that understand your needs if you are Deaf or have a disability”. ✍ Additionally, the disability support

services sometimes provided new technology, of which the students had previously been unaware.

Get all the help and support you can from both the department you are studying in and Disability Services. With the latter, you will be surprised what is available. For example, I didn't know what an FM headset was. It turned out to be my 'godsend' for almost a year. ✍

Not all students who declared their hearing loss on enrolment made use of the disability coordinator, or services of the disability support office. Reasons identified for this non-use included services not being readily accessible, or no accommodations required. Additionally, some students admitted that they had not fully understood what their specific needs were, or did not always have the necessary knowledge, skills, or confidence to advocate their own needs in this new environment

I had a new FM after schoolbut I didn't want to walk up at the front of the lecture and put it in front of the lecturer. I realised later that that was because I thought uni was the same as school, but it wasn't.

Therefore, the obstacles were greater than I had imagined so... class sizes and seating not always ideal for lip reading, lecturer styles such as not facing the class. I found asking for help and the support I needed difficult as I felt I should have known these things before starting.

In contrast, some students felt they could independently access the accommodations they required, and had developed effective and self-directed support without the assistance of the disability support office.

As I have studied a lot previously I used my prior experience to inform me rather than use the [disability support] office, liaising with the appropriate lecturer throughout the course, and establishing a network of peers who are doing similar papers.

Use of assistive hearing devices

As discussed in Chapter Four, there was a high level of use of hearing aids among the survey respondents both within the tertiary environment, and as part of their everyday lives. Even though a high proportion of students did use their hearing aids, many raised issues such as; “even with good hearing aids, I still miss a lot of what is said” and “people forget that hearing aids don’t fix my loss. I still need them to face me”. Common responses related to not hearing lecturers because they spoke too quickly, would not use the microphone system, or had an accent that was too hard to understand. The inability to follow what other students were saying, both in the class and outside it, also featured in their answers. One student with a profound hearing loss summed up what conversations were often like for her:

Sometimes when I talk to people, I tend to completely miss the point of the conversation and sort of string it along with non-committal comments until they go away. It generally doesn’t work very well, and I tend to cringe about it afterwards.

In the survey responses, three students identified as having cochlear implants, although only one said they used their implant while attending classes. Therefore, it was crucial to examine the reasons for the relative absence of implant use reported by these students. The qualitative responses identified that the student who did use her cochlear implant at university, saw herself as mainly associating with the hearing

community, and was reliant on her aural/oral skills. She was not entirely satisfied with the input she received from the implant, as her following comment shows.

I still find it difficult listening to and participating in class discussions and group discussions in noisy environments – I wasn't really expecting much of this sort of activity but this turned out to be quite frequent in some subjects... spoken communication in anything but a quiet environment is very difficult. ✍

In contrast, the two students who did not use their cochlear implants while attending classes identified as culturally Deaf, used NZSL as their primary form of communication, and interpreters for their lectures and tutorials. They were also at an institution that had a larger Deaf student community.

I might occasionally use my CI with hearing friends from high school, but for the past few years I have hardly used it, in fact almost never, and I don't use it for university because I have the support of NZSL interpreters and I get the information more accurately through NZSL interpreters than by using my CI. ✍

It was clear from the findings that even with the use of assistive listening devices such as hearing aids or cochlear implants, students continued to experience listening conditions that were less than ideal. This was especially so in noisy or interactive environments. Background noise was one of the major communication issues for students who used their residual hearing supported by hearing aids and cochlear implants. Students described noises that had an impact, and these varied depending on whether students were in a lecture theatre or a seminar/tutorial room. Lecture theatres, by their sheer nature, are large spaces with high ceilings, an abundance of hard surfaces

and many people. Therefore, main issues tended to relate to talking or movement of other students combined with the reluctance of some lecturers to wear amplification microphones and equipment failure. These all contributed to extremely difficult listening environments for students. Group work, which involves many people talking at the same time and is often legitimately part of seminars and tutorials, seemed to pose the biggest problem. Participants further identified computers and ventilation systems raising the overall background noise level of the room in seminar and tutorial rooms, and noise coming in from external sources, such as traffic, as making it harder for them to hear and concentrate.

Educational technology

The use of online programmes such as Blackboard benefitted students, as they were able to access slides and notes prior to the lecture. This access to information enabled students to cue in to the topic prior to class, which they saw as a positive use of technology. Use of email was widely supported “I like the ability to email lecturers and other students, and the online resources they put up are great”. ✍ Some subjects also offered the ability to interact online with both the lecturers and other students.

The interactive nature of the course papers (using ‘moodle’ site) enables me to perfectly interact with everyone on the paper via computer instead of face-to-face interaction (which would be harder for me). ✍

Students also made use of texting as a means of communicating with staff and other students.

Text is so good! It’s normal ‘cos everyone does it. You don’t feel like you’re a pain if you’re texting people.

There was however, a lack of knowledge about newer forms of technology, such as speech-to-text or real-time captioning. Additionally, it appeared from some students' reactions to probes about other forms of technology, that they often were not informed about what assistive technology options might be available to them, as this profoundly deaf oral student's response illustrates.

Wow! No, I have never heard of those I have never been offered anything like that. That sounds really good!

Social experiences

In the quantitative findings, a large proportion of respondents (75%) cited some level of difficulty with their social interaction at university or polytechnic. This finding was elucidated by findings from the qualitative data, in which students described feelings of isolation, loneliness, and frustration with their lack of social interaction with hearing classmates. Typical comments included the following:

In tutorials and things, everyone would be talking too fast and it was impossible to make friends because I was focussing on the class more than anything. There was only really one other deaf person there...it was quite a hard experience really. I sort of thought maybe I would meet people through clubs and that sort of thing but being the only deaf person among the hearing is very hard.

I didn't really have any friends at university. I'd simply go to classes, the library and go home. You'd see heaps of other students get together and just hang out – and I didn't have that. So yeah, it was isolated. Very much isolated. I can see why deaf people are more inclined to attend [name of polytechnic removed] as they have a more 'deaf-oriented' service, and more

deaf students, which makes socialising that much easier. But, I didn't want to go to [name of polytechnic removed] as I had my heart set on getting a university degree.

One Deaf student, who had experienced university life at Gallaudet University, had this to say about the differences for her.

As pointed out earlier, I'd simply go to class and leave class [in NZ]. My only friends were my interpreters and/or notetakers. There was no one else really. It was a very difficult thing for me to deal with originally, as I went to Gallaudet University during my first year of university, and the social aspect of things weighted heavily in my overall experience. Before and after class, we'd all just natter away. I mean, I've lost count of the number of times where we'd all remain in class long after it had ended, arguing our point of views on what had been discussed in class! That was just amazing, really stimulating. I just didn't get that at [NZ university]. While I had gone to pains to remind myself that my experiences at [a NZ university] would never ever parallel that of Gallaudet, it was still difficult at times.

The inability to be included in extracurricular activities, such as sports and clubs, highlighted for some students that their inclusion only applied to the academic side of their time in tertiary education.

If for example, orientation week or a ball or something, then I think they should provide interpreters, and the same goes for sport as that is an area we are missing out on. Those are the types of experiences we are missing.

Last year I wanted to play netball but it was dark so it was hard to lip-read the girls, so that was an isolating experience. Classes were ok, but for netball, there was nothing. I was just left on my own.

There was also frustration at the lack of funds available for interpreters for social activities, with some students referring to experiences they (or their friends) had while studying in America.

In America I've heard [the] university funds interpreters for social activities. It would be nice if we were able to have the same amount of social interaction here. I would probably get involved with more things. I mean I don't really know what it would be like to be included in that because I never have been. ✍

My access to other experiences is confined by the fact that there isn't funding available for interpreters. I tend to get my needs met outside university with Deaf sports, Deaf club that sort of thing. I didn't really worry because I had my family. So studying here was hard. It was very different from my American experience. The high school exchange, I had interpreters for sports so it was a positive experience.

For some students, the answers lay in having a small group of people they knew well, or time with their family, or spending more time with deaf people who did not attend tertiary education institutions.

I tend to not have a large group of friends. I have a tendency to have a smaller group. I spend a lot more time with my family and things like that.

Family is really important to me, and with a few close friends, I'm satisfied with that.

The following comment sums up many of the participants' feelings, and seems to show acceptance of the limitations placed on social interactions within a hearing environment.

I can see why people would leave. If you're there for the academic side its fine, but if you were there for the social side it wouldn't be that great. I am very, very focussed on getting my degree, where other people might not be.

Satisfaction with educational experiences

I asked participants how satisfied they were overall with their tertiary educational experiences. The qualitative written responses were a valuable addition to understanding reasons for students' levels of satisfaction, and findings from the interviewees added further clarification. In general, there was a significant sense of personal satisfaction with what they had achieved academically, as these students' comments identify:

I'm happy with myself. I'm proud that I've been able to do it myself. It's been worthwhile; I have a sense of satisfaction. There is definitely a sense of achievement and relief and I'm looking forward to graduation!

Getting As and B+s really gave me a sense of achievement, that a deaf person 'could do it.' I actually topped my class more than a few times, which was fantastic. I love to study and I love reading. I love the pace and pressure of completing an assignment on time and awaiting the results. I aim high and set standards, which I strive to achieve. I gain great satisfaction in doing well.

However, some students expressed a level of dissatisfaction with the extra effort they needed to make to achieve results similar to those of other students. The extra time and effort it took to gain information and the high levels of concentration required took their toll on students' energy levels.

I get very tired with the extra bombardment of sound and I really like to retreat into my quiet world when I have been feeling stressed or over-loaded by sound - and fatigued by the need to concentrate intensively on trying to keep up with conversation or discussions for long periods of time.

Because of their perceptions of increased workload and fatigue, some students chose to study part-time. The extra effort required to 'keep up' with their peers, and continue to succeed with their studies, often meant that full course loads were not realistic. In addition, some of the older students answered that they studied part-time primarily due to work or family commitments, which is a common reason for many mature students, and not unique to DHI people.

Attitudes encountered from other people were also important to the students' overall feelings of satisfaction. Participants commented on the attitudes of other students and staff quite frequently, and they ranged from highly positive attitudes to the exact opposite. Many participants outlined the positive connections they had made with other students such as, "making new friends" "introducing other students to NZSL and Deaf culture" and "people taking the time and effort to communicate with me". Additional high points included other students realising the DHI students were "capable of doing well and achieving", and participants experiencing "truly great teachers who really care about their students". In contrast, several students spoke about others treating them as though they were less intelligent, or unable to achieve high marks because they had a hearing loss. They spoke about other students and lecturers treating DHI students as

though they were ‘stupid’ by lowering the intellectual level, or ‘dumbing down’ the content of conversations. One student, who came from a Deaf family, had to endure a particularly embarrassing and upsetting situation with a lecturer who did not understand about NZSL or the student’s Deaf culture.

The lecturer was one of the most ignorant guys I have ever come across with – he actually even referred us to ‘apes’ and later said that what we were using was like Makaton. I was really upset about the ‘ape’ comment, especially considering it was made in front of a full class.! I immediately did up a letter of complaint and asked the disability coordinator to address it, and she simply passed on the complaint to the university’s disputes group. The process was expected to take months, so I decided to organise a meeting myself with the two interpreters and the lecturer at his office. He actually thought the comment was ‘quite witty,’ and after about 45-minutes of discussion, he finally apologised, in his own way. We all left, rather unsatisfied but placated in some way.

Other students described situations in which they had felt embarrassed or belittled by lecturers or other students, as the following written responses illustrate.

Unhelpful comments about my hearing. Humiliated and laughter because I can’t hear in front of lecture room by other students. Put into situations where I can’t function by lecturers repeatedly. ✍

Some lecturers would not wear their transmitters. Some said I should not be at university and there was an assumption that because I’m deaf I’m also a dumb. I did not expect that some people would have such strong negative opinions about a deaf person practicing law. ✍

Although the qualitative findings revealed many difficulties and problems for these DHI students, the students indicated further positive aspects of their studies such as, gaining a sense of achievement, increased self-confidence, and feelings of independence. For some, it was, “a sense of fulfilment with being able to pick up academic life” ✍ or “being fully independent of an itinerant teacher, and having more independence has been good for my self confidence”. ✍ For others it was the “thrill of being published and having my work recognised by my peers” ✍ or being accepted, “I’m the oldest student, the deafest, and the most fume intolerant, but I have never been made to feel like a freak”. ✍

Solutions found and advice offered to other DHI students

Participants described a variety of solutions they had implemented including, self-advocacy and self-reliance, ensuring that they knew what supports they were entitled to, and what was available to them in terms of human resources and technological aids. Participants viewed educating other students and staff about deafness, and having the perseverance to see things through to completion as important. Students further identified the need to disclose their hearing loss to staff and students, in order to gain understanding and appropriate assistance, to make participation academically, and socially a better experience. Underlying this was the need for strong self-advocacy skills and self-belief, as these are a key part of empowerment for these students.

If any support provided by the university is not helpful or needs tweaking do not be afraid to let the disability support staff at the university know. ✍

My parents always told me I could do anything I wanted, they encouraged me to try things, and this is what I did. This helped to build a sense of

esteem and confidence that helped me to push past barriers that I, and others, inadvertently put in the way. ✍

Others advised students to ensure that they asked for what they thought they needed, rather than “what other people perceive you to need”, and to develop adequate support systems “both socially and academically”. Suggestions for obtaining these supports included asking for one-to-one sessions with lecturers to clarify their teaching, and developing a solid support network that includes family and friends. A profoundly deaf student who had experienced a strong sense of isolation had this to say:

Make or keep up contact with Deaf people in the area so you don't get depressed if you don't make friends with others on campus. Only another Deaf, hearing-impaired person really understands your difficulties in the hearing world. ✍

There was overwhelming encouragement from the participants to DHI students considering tertiary education, to “give it a go,” persevere, and experience tertiary study in order to realise their potential and reach their goals with comments such as:

Only by trying, will you ever succeed. The bitterest pill to swallow is the later thought that if you had only tried, how much different your life might have been.

We need more people like us in university to increase the awareness of deaf issues, but also to increase our skill base. Always use the resources that are available. Don't be put off by negative attitudes. Stand up for your rights. Use your support groups to help you, as university is not easy.

Several students spoke of the attitudes DHI people or their parents have about their own academic ability that limits their potential. One student had this to say as part of her closing interview comments.

I wish every deaf person would go to university. I think some people think “oh I’m deaf, I’m not going to go” or their parents think “oh my kid’s deaf” and they lower their standards, that kind of thing. I wish people wouldn’t do that. There aren’t many deaf people at university and it’s kind of, like you know, how to say... it’s not a big disability being deaf or anything. You can get over it. It is really annoying when I see deaf people around who have nothing to do. They think that being deaf is a reason not to try. They don’t seem to push themselves enough. Maybe I’m being a bit harsh.

A final piece of advice came from a student who had overcome many hurdles herself to gain a tertiary education. She spoke about needing to believe in herself, despite the setbacks, and wished that someone had provided her with such advice to assist her in her journey.

Being in a position to consider university study makes you already a winner. To have come this far with a disability means that you have the determination, the perseverance and the resilience that will likely ensure your success. Kia kaha (Be strong).

Discussion

The qualitative responses to the open-ended questions, and the subsequent data obtained from individual in-depth interviews, expanded, and clarified, understanding of current learning and participation experiences of DHI students in tertiary education in

New Zealand. A discussion of aspects such as prior schooling, readiness for academic study and the need for guidance when choosing a career or course of study follows. This leads into a discussion of key aspects of the students' tertiary educational experiences, including access to the curriculum, and educational and social participation. Finally, I comment on the solutions the students in this study implemented, and the advice they provided for future DHI tertiary students.

Identity

In this study, a revealing aspect was the way students described their sense of 'who they were' and where they 'fit' in the world, in other words, the perception students had of their own identity. For DHI people establishing an identity involves identifying their personal communication preferences, and their place in D/deaf and/or hearing communities. Some students, who attended tertiary institutions that had larger numbers of DHI students, confirmed that encountering sign language and Deaf role models for the first time, acted as a catalyst to modify their previous identity from a hearing or hearing-impaired identity, to a Deaf or bicultural identity. Other students spoke about the fluidity of their identity, moving between Deaf, hearing-impaired or hearing identities, depending on the situation in which they were functioning. Hyde et al. (2009) reported similar findings in their study of DHI students at an Australian university.

Academic readiness and transition to tertiary study

Many students found the progression from secondary school to tertiary study challenging, and initial concerns about study skills, time management, exams, and achieving good marks were commonplace. These findings reflected those of earlier researchers (Eckes & Ochoa, 2005; Fiedler & Dannekerer, 2007; Madaus, 2005) who reported that many participants left school without the self-advocacy skills they needed

to negotiate the tertiary system. Similar to Gardynik's (2008) findings on parental support for postsecondary students with learning disabilities, the findings in the current study revealed instances of parental support in advocating within the tertiary education system. Specifically, students' mothers became involved in meetings with disability support services and arranging interpreters. At a time in their lives when young people generally are developing greater independence from parents, it would be preferable if DHI students were better equipped before finishing high school to advocate on their own behalf.

In line with earlier studies (Danermark, Antonson & Lundstrom, 2001; Furlonger, 1998; King, 1990; Punch, Creed, & Hyde, 2005; Schroedel, 1991, 1992), students in the current study described their difficulties making career choices, their limited knowledge of occupations, and their perceptions of barriers related to their hearing loss. The qualitative findings revealed that students had not, in the main, found teachers or careers advisors particularly helpful when planning future tertiary studies. In New Zealand, the area of transition from secondary school to further education, training or employment for DHI students is addressed in a decidedly ad-hoc fashion, and largely falls to the RTD and/or AODC who work with the students in compulsory school settings (Logan, 1995). Hyde and Power (2004) studied itinerant teachers in Australia, and McKee and Smith (2004) surveyed itinerant teachers in New Zealand. Both studies reported that itinerant teachers had very little time to collaborate with other professionals, including career advisors and guidance counsellors. Therefore, students with a hearing loss may not be getting the best advice, or support, in terms of planning their future options. Career advisory staff, possibly due to their own lack of understanding of the implications of the student's hearing loss, may not be working in a fully informed way. Conversely, itinerant teachers and advisors, while they have knowledge of hearing loss implications, may not have the required career practitioner knowledge. Given, that

career-planning skills can reduce the high rate of non-completion of tertiary courses by DHI students (Stinson & Walter, 1997), this lack of guidance and support is potentially significant for this group of students.

The survey data showed that many students in this study had not received regular RTD support during their secondary schooling. The qualitative responses expanded on the reasons for this and revealed that, for some, it was a choice they made, for others, the service was not offered to them at the time. All students with an identified hearing loss, would have been on an ADOC caseload, and received some level of support through that advisory service. One could surmise that a lack of itinerant support during their secondary schooling, influenced these students' perceptions about the assistance they would require accessing the tertiary learning environment. Certainly, some students spoke about their unpreparedness for tertiary study, and not understanding the accommodations that were potentially available to them. The findings identified that failure to access such supports meant some students had negative results and experiences when commencing tertiary education.

All tertiary institutions in New Zealand have 'open days' specifically designed for potential students, and many schools arrange visits with students who are intending to apply so they can investigate various academic programmes that interest them. DHI students could be better informed about services available at the tertiary level. If, with appropriate support, students were encouraged to visit the disability services office as part of this orientation day, they could increase their knowledge about resources, which could aid their transition to tertiary study. The findings reinforce the need for transition programmes specifically aimed at DHI students, due to the unique needs this cohort have prior to starting their tertiary studies (Bonds, 2003; Furlonger, 1998; Garay, 2003; Kolvitz & Wilcox, 2002; Loera, 1998; Punch, Creed & Hyde, 2005; Punch, Hyde & Creed, 2004).

In the current study, as in Hyde *et al.* (2009), the main reason students gave for choosing a particular institution was that it offered courses they wanted to study. However, it was clear from the qualitative responses that some institutions had a better ‘track record’ than others for providing appropriate services to DHI students, and that this had influenced their choice, in addition to institutions having courses they wished to study. Happily, some students who had chosen to attend tertiary institutions that were not ‘known’ for their support of DHI students previously, indicated that the services provided were better than they had been led to believe they would be. This possibly relates to support services being more aware of students’ needs, and a growing acceptance within tertiary institutions that all students have the right to access to the curriculum equitably.

Enrolment status

Reasons identified in the written responses for students choosing to study less than a full academic load, were further explored in the interviews. In a recent study, Richardson (2010) identified that “students who were deaf or hard of hearing had a significantly lower workload than the non-disabled students” (p.84). The previously reported difficulties of the extra time and workload required to achieve in the tertiary sector related to the student’s hearing status featured strongly in this study, and reflected the earlier findings of Richardson and Woodley (2001). Older students, who were in employment at the same time as they were studying, explained that the part-time workload related to their other responsibilities and commitments, rather than as a direct result of their hearing status.

The students who studied externally reported different academic and social experiences, and tended to be older students who had made a conscious decision to study this way for the perceived benefits. Richardson (2010) identified that the DHI

people were a significant percentage of the oldest groups of students undertaking distance education. This form of tertiary education meant that some students could engage directly with their peers through electronic means (e.g. Email and on-line discussions), and with the syllabus, through paper-based or electronic materials. This enabled the students to feel more engaged with the course material, and better able to communicate with their peers and lecturers, and fits with an observation made by Richardson, Long, and Foster (2004) who concluded:

Distance education does seem to level the playing field between deaf students and hearing students by alleviating the communication difficulties and social discrimination that would undermine the academic engagement of students who are deaf or hard of hearing in campus-based higher education. (p.82)

Other studies (Richardson, 2009, 2010) have produced conflicting results. The earlier study (2009) identified that deaf students undertaking distance study were less likely to obtain good degrees compared to their non-disabled peers. However, the 2010 results indicated, "The students who were deaf or hard of hearing also achieved a pass rate and a percentage of good grades that were not significantly different from those of the non-disabled students" (p. 91).

As the findings of this study identified, some students chose to study extramurally as a means of overcoming some of the barriers they had experienced, or perceived they would experience, if they were on-campus. The primary disadvantage of distance study identified in the literature was the potential sense of isolation, (Morgan & Tam, 1999; Richardson, Long & Foster, 2004; Want & Grimes, 2000) and some students did express this as an issue. Obviously, there are many benefits associated with on-campus enrolment, and it would preferable for tertiary education providers to address DHI

students' needs adequately, rather than students depriving themselves of the advantages of the on-campus social and academic experiences to overcome communication and learning barriers.

Accessing the curriculum

Students who accessed support services once they commenced tertiary study, had to make the switch from being passive recipients of support in high school, to active consumers of support services at the tertiary level. As in Sameshima's (1999) findings, many students in this study had little or no training in how to use supports such as notetakers or interpreters, and consequently, quickly had to learn how to work effectively with such support staff. It is imperative that future students come to tertiary study understanding the differences between high school and tertiary education, and with the necessary skills to negotiate the tertiary environment. The years immediately prior to leaving school, may be the optimum time in which to educate students so they are well prepared with knowledge and skills, enabling them to make the best use of the resources that can be provided at a tertiary level.

Both hearing-impaired and Deaf students used notetaking support services, and it was quite clear they preferred trained notetakers who understood how to take notes for DHI students' needs. Students indicated their appreciation and perceived value of this dedicated and individualised service. There were however, issues identified with the peer notetaking system, reflecting the findings of Hyde *et al.* (2009), such as the unreliability and lack of professionalism of notetakers, and the sometimes inadequate and subjective nature of a classmate's own notes. Further, students reported missing some content of their lectures and tutorials, even with access to reliable notetaking support. Spradbrow and Power (2004) reported similar findings, in which three-

quarters of their participants felt that they were missing some of the content of their lectures and tutorials, despite having access to notetaking support.

Participants viewed electronic notetaking (ENT) as excellent use of the technology available, and those who received this service found it preferable, in the main, to written notes that they received after the lecture. Some students indicated that in certain situations or subjects, they preferred ENT to the services of a sign language interpreter. However, this study revealed that tertiary institutions rarely accommodated students who wished to have both peer notes and ENT, despite the fact that Spadbrow and Power (2004) identified that provision of ENT for oral/aural students could parallel the provision of interpreters for signing students.

While the students in this study agreed that notetaking and interpreting services helped to provide access to course content, they felt that these provisions lacked the clarity and directness of one-to-one communication. Additionally, if the speed of instruction was too quick, DHI students did not feel comfortable stopping the flow of the class to ask a question or further clarification. These findings are consistent with those of Long and Beil (2005), who reported that students often felt left out of classroom communication, and if they were using an interpreter, they expressed difficulty responding to the lecturer or tutor's questions because of the 'processing-time' experienced. It is critical that all students have the opportunity to be full participants in learning situations and, as the DHI students in this study indicate, often the pace of instruction and teaching styles that do not facilitate their inclusion, mean they are frequently not receiving equitable access.

Students found that technology, such as PowerPoint and Blackboard, were useful tools that assisted their access to lecture content. Both are technologies viewed as 'instructional' for hearing students, but for DHI students, they are 'assistive technology,' as they improve the students' ability to access the information provided in

a lecture situation. Likewise, text and email, while used by both hearing and DHI students, performs an assistive function when used by DHI students thereby, “improving their functional capabilities, and/or compensating for their hearing loss” (Lartz, Stoner & Stout, 2008, p.72).

It was notable that there was minimal reported use of other technology such as electronic notetaking, speech-to-text translation, and video conferencing, by participants. Victoria University in Wellington uses C-Print, with varying levels of success, rather than sign language interpreters for many of its students (Vale, 2004), but this was not a common occurrence in this study. When questioning the students about their level of use, it became apparent that many were unaware of this technology. Often exposure to such potentially advantageous technology did not occur when the students were at high school, and furthermore, the disability support office did not routinely offer use of such technology. This is disappointing given that various technologies have the ability to provide environments that are more accessible for those who are DHI. Lowell (1987) suggested that quality postsecondary educational programmes for DHI students must include “utilization of current technologies to aid education and willingness to explore new ones” (p. 344) and further, Lang (2002) emphasized the necessity to stay abreast of new technologies, and be innovative in incorporating technology into the curriculum.

Students, whose primary means of communication was NZSL, were provided with interpreting services, but they raised concerns about both the shortage of interpreters, and the variation in quality of the service provided. These concerns have been highlighted in previous studies about interpreting services provided for tertiary students (e.g. Jones, Clark, & Stolz, 1997; Komesaroff, 2005; Knox, 2006; Menchel, 1998; Power, 1990; Russell & Demko, 2006; Sameshima, 1999). In addition, some study participants felt that lectures were never fully accessible to them, regardless of the

approach that interpreters used. However, these students also made many positive comments that revealed a high level of appreciation for the interpreting services they received, and indicated an understanding of how difficult it was to provide complete and accurate interpretation in the tertiary environment. Napier and Barker (2004) identified similar conclusions in a study that investigated the interpreting preferences of four university students in an Australian university.

In New Zealand, as in Australia (Hyde *et al.* 2009) Britain, (Traynor & Harrington, 2003) and the USA (Marschark *et al.* 2005), there is a chronic and ongoing shortage of qualified and experienced interpreters with the ability to provide adequate interpreting services at the tertiary level. Participants noted this shortage especially outside the Auckland region. In 1996, discussions took place between DANZ and AUT that stressed the importance of having at least one tertiary education institution fully resourced with specially trained educational interpreters (Dugdale, 2001). To date that has not occurred, and New Zealand still does not have any specific training for educational interpreters who work in either the compulsory or tertiary education sectors. Reffell and McKee (2009) made the observation that although funding is available for interpreters in New Zealand tertiary institutions, a shortage of interpreters often compromises the availability of this service, and historically has led to institutions employing unqualified interpreters (known as communicators). Only one student in this study mentioned having a communicator instead of a qualified interpreter, and was satisfied with the service she received. Further, given the indication that some signing students preferred electronic notes to interpreters, and the chronic shortage of interpreters available and trained to the high level needed for academic interpreting in the tertiary education sector, it would appear that ENT has the potential to be a valuable service for signing students. Add to that the difficulties students who rely on lip-reading and residual hearing have in lectures and tutorials, and ENT deserves a higher

profile within tertiary education than it currently has especially given the findings of Stinson, Stinson, Elliot and Kelly (2004) in which,

Students rated comprehension with the real-time display of the speech-to-text service as greater than comprehension of an interpreter. They also reported that the saved text of the speech-to-text service was more helpful than note taker notes. (p.2)

Clearly, students in this study encountered communication challenges in lectures and tutorials, as has been previously reported (Hyde *et al.* 2009; Schroedel, Watson & Ashmore, 2003; Spadbrow & Power, 2004). Many participants identified the difficulty they had lip-reading lecturers who paced up and down, and understanding tutors who wrote on the board while continuing to talk. Students raised difficulties related to environmental conditions such as poor room acoustics, poor lighting, and background noise that hindered their ability to use their residual hearing and lip-reading skills. Further, they expressed frustration with those lecturers, who refused to wear a microphone, and lecture theatres that had broken or intermittent loop systems. Those students who used sign language interpreters found that 'processing-time' and the inability to attend to the interpreter and additional information being presented at the same time such as, Power Points or physical demonstrations, frustrating. These factors can be addressed, and require staff to be provided with appropriate training so they can adapt their teaching style to one that is more accessible, preferably through an institutional commitment to ongoing professional development (Kolvitz, Cederbaum, Clark, & Durham, 2000) . Lang (2002) concluded:

If participation is to be optimized in the higher education environment to increase the success of a wider population of deaf students, increased

professional development efforts are needed for college and university professors, with particular emphasis on helping them to understand the critical nature of classroom participation and the psychosocial and communicative factors that may inhibit participation by deaf students.
(p. 276)

Both hearing-impaired and Deaf students commented on the limited interaction they had with their hearing peers, and indicated that they felt this hindered their learning and participation in the academic environment. Foster and Holcomb (1990) identified that students felt they often missed significant informal information such as exchanges about study tips or instructor expectations, as did the students in this study. The limited access to spontaneous discussions with peers and advisors arose both inside and outside the classroom, and curtailed the ability of students in this study to exchange their ideas with others. This type of academic discourse is key, as informal conversations can contribute significantly to a student's academic experience (Woodcock *et al.* 2007).

As identified in previous studies (Foster *et al.* 1999; Komesaroff, 2005) a few students were clearly disgruntled with the support they received, citing a lack of knowledge on the part of disability support and academic staff about their learning and communication needs as a DHI student. Participants expressed their frustration with academic staff who assumed that providing notetakers, tutors and interpreters, was all that was necessary for DHI students to achieve equity. These supports undoubtedly help, but as Bills *et al.* (2000) found, there is a danger in staff assuming that this is all that is required. Participants indicated that more staff training was required to provide staff with appropriate knowledge and communication techniques to address these issues.

Accessing support services

A number of students were not accessing the disability support services once they were on campus and these findings are consistent with earlier studies (e.g. English, 1993; Hyde *et al.* 2009; Luckner, 2002). In addition, this study's findings echoed research that identified that students with good oral communication skills, often tried to 'blend in' by denying or minimising the effects of their hearing loss, preferring to rely on their lip-reading ability and residual hearing (Menchel, 1998; Richardson, Long & Woodley, 2004; Schroedel, Kelly & Conway, 2002; Spradbrow & Power, 2004). This approach is often the forerunner to an academic experience that is less than positive, and can lead to students withdrawing from their study programme. The current study's findings suggest that assisting prospective tertiary education students to source appropriate information about programmes and support services available, when they are making decisions about future study options, could increase their chances of successful transition, and their initial forays into tertiary study.

The qualitative findings indicated that some students had initially approached disability support offices for assistance, but chose not to continue to use the services offered. A number of students identified that they chose not to engage, or to minimise their involvement, with disability support services because they felt staff attitudes and communication was less than ideal. Issues, such as, a perceived lack of knowledge necessary to understand or assess deaf students' needs effectively, and a lack of understanding around the cultural needs of Deaf students were identified. Compounding this, according to some students, was the notable absence of effective, appropriate communication methods. Kolvitz *et al.* (2000) highlight the importance of these skills.

It also should be expected that a staff member whose responsibility is to work with deaf and hard of hearing students in the postsecondary setting have adequate knowledge of the implications of hearing loss on individual development, and appropriate approaches and techniques for meeting the needs of the student... The ability to communicate effectively with students who are deaf or hard of hearing is a critical issue. (p.8)

Kolvitz *et al.* (2000) concluded that tertiary institutions should consider employing DHI people in their support services. In the past, two New Zealand universities, had a Deaf Resource Coordinator for DHI students on staff, and part of their brief was to mentor and act as a role model for the DHI students at the institution. Unfortunately, for various reasons, there are no Deaf people in these positions now, replaced instead by hearing coordinators.

Generic support services were not well utilised by participants in this study. Perceived communication difficulties, and the added time and effort it might take, meant that many preferred to seek support from family or friends, or the disability coordinator. The exception was the learning support service; participants who did access learning support via individual tutoring, valued tutors who could communicate effectively with them regardless of their communication preferences, and are consistent with the findings of Lang *et al.* (2004) and Lang, McKee and Conner (1993). It follows, therefore, that to increase the uptake of these support services by DHI students, tertiary institutions need to recruit support services staff with appropriate communication skills and knowledge. If DHI students are able to communicate easily and fluently with the relevant staff, the services may become more attractive, and these students more inclined to access the support offered.

Few tertiary institutions offer interpreting, speech-to-text or notetaking support outside of scheduled class and lecture times, which can include activities like informal student study-groups who meet to discuss the content of courses, or work on collaborative assignments (New Zealand disability coordinators, personal communications, September 2008). Certainly, for students in this current study this reflected their reality. This means that the majority of DHI students in New Zealand are not routinely receiving the resources required to access generic services on campus, or for activities that fall outside the compulsory academic requirements.

Social inclusion

As well as academic inclusion, a significant factor contributing to student satisfaction is the perception of adequate inclusion in the social system of an educational institution (Stainback & Stainback, 1996). Participants indicated they were 'satisfied' with the attitudes of other students in the quantitative section of the study, however, the qualitative findings indicated that many were experiencing feelings of rejection, loneliness, and isolation. The qualitative findings echo earlier investigations of Brown and Foster (1991), Mudgett-DeCaro and Foster (1992), Menchel (1998), and Stinson and Walter (1997) who observed similar experiences with mainstreamed postsecondary DHI students. Participants in this study spoke of their struggles to interact with their hearing peers in ways they found personally satisfying, and there were many instances where DHI students expressed their disappointment with the effort other students made to communicate with them. The interview participants in the current study displayed an air of acceptance about their loneliness. Some had unusually low expectations about their ability to develop new relationships, and satisfied their social needs outside of the tertiary setting in places such as, Deaf club, or with family or small groups of intimate friends they had known prior to attending tertiary institutions, rather than on-campus.

Furthermore, although it is known that interaction in extracurricular activities is an fundamental part of life for any student (Tinto, 2002), this research indicated that DHI students still do not have the support they need to participate fully in extracurricular activities, reflecting earlier findings (e.g. English 1993; Stinson & Walter, 1997). Students described the difficulties they had in terms of accessing activities such as debates, sports teams, or social events. Many said that feeling included or participating in such activities was incredibly hard, and chose not to attend or join campus clubs, even though they admitted they would have liked to do so.

The lack of integration into the social aspects of tertiary study has implications for DHI students, as without feeling part of the wider fabric of the institution, there is a higher chance of feeling isolated and lonely which can impact students' ability or willingness to continue with their studies. This low-level social interaction is an area that deserves more attention from tertiary institutions, if they are to provide a truly inclusive environment for DHI students.

Solutions found and advice offered

Participants demonstrated a high level of enthusiasm for the experiences and opportunities that tertiary education can provide. They were however, realistic about the issues they faced, and appeared to have been assertive and proactive in finding solutions to the barriers they encountered. Many identified the skills and knowledge they felt were invaluable when negotiating, and obtaining, the accommodations they needed to access course content; these included good self-advocacy skills, and the capacity to believe in their own abilities. Students observed that knowing how to utilise the services of notetakers, interpreters, and other support staff successfully was vital. As the majority of participants were attending institutions with small numbers of other DHI students, they identified aspects of social integration and participation in extra-

curricula activities as areas that caused concern. Most provided positive encouragement to potential students, and looked forward to seeing increased numbers of DHI students in tertiary education.

Summary

This chapter has reported and discussed the qualitative findings relating to the learning, academic participation, and social participation experiences of DHI students in New Zealand tertiary education institutions. The findings were grouped into the following categories, (a) personal characteristics, and aspects such as identity formation; (b) academic readiness and transition to tertiary education; (c) access to the curriculum and use of support services; (d) social inclusion; and (e) solutions and advice for future students. The concluding chapter of this thesis identifies the key findings as they relate to the research questions, and provides recommendations to enhance the implementation of policy into practice.

CHAPTER SIX – CONCLUSION AND RECOMMENDATIONS

Introduction

Most DHI students in New Zealand attend tertiary institutions where there are few other DHI students, and this presents a different learning environment from institutions with larger numbers of DHI students found in other countries. Therefore, the purpose of the present study was to examine the learning and social participation experiences of DHI students in New Zealand tertiary education settings and, as well as reflecting study findings in terms of the published literature, to also make recommendations for policy and practice in New Zealand. Any subsequent changes to policy and practice should encourage a greater compliance with New Zealand's national and international obligations regarding the inclusion of DHI people. Recommendations could lead to changes that enhance students' academic and social participation and completion rates, so that they are better able to reach their academic and social potential. If outcomes for DHI students are improved, it is more likely that they will gain employment that is commensurate with their levels of ability, and interest.

Sixty-four students responded to the written questionnaire, and I interviewed eight of those students, to expand upon, and elucidate the survey findings. The qualitative findings were analysed, summarised, and placed in the context of the literature using direct quotations from participants to illustrate findings. This final chapter identifies the key findings of both the qualitative and quantitative data analyses, outlines current students' advice and suggestions to address identified barriers, and provides recommendations for practice. It further explores ways tertiary institutions can implement recommended practices, and identifies ways to enhance the implementation of policy into practice for DHI students. Finally, the chapter outlines the limitations inherent in the study, and suggests directions for further research.

Key findings

Through a mixed method approach, the study obtained a quantitative analysis of the situation of many DHI students in tertiary education in New Zealand. In addition, the qualitative components have personalised and illustrated the contexts of the quantitative data. The study's findings revealed that pursuing further education beyond secondary school posed many challenges for DHI students. However, tertiary education also provided positive experiences and benefits. Analysis of the findings identified the following as being salient: (a) early language and educational experiences, (b) transition to tertiary study, (c) access to support services and assistive technology, and (d) interactions with others. The following section will outline key findings for each area.

Language and schooling: The pre-tertiary experience

- ❖ The majority of participants in the study (58%) had a severe or profound hearing loss that had occurred at birth or by the age of three years. There was a high use of hearing aids and auditory-oral communication, with 87.5% continuing to communicate via speech and lip-reading, at least as part of their primary language use, after leaving school. This appears to have been a factor in these students reaching admission to tertiary education, given the lack of interpreters working within the compulsory education sector in New Zealand.
- ❖ Over half of the study participants (60%) had not received RTD support during secondary school. This perceived sense of independence may have influenced the students' initial low expectations of the support they would require at the tertiary level and may explain why some chose not to declare their hearing loss when initially enrolling at an institution.

Transition from secondary to tertiary education

- ❖ Seventy-eight percent of students in this study had obtained a Year 12 qualification or higher. Students thought that they were well prepared academically for the challenges of tertiary education, and considered themselves hard workers, which they felt had helped them achieve the entry qualifications needed to attend tertiary institutions.
- ❖ Participants' perceived that their high school teachers had low expectations of their ability to pursue professional careers requiring tertiary qualifications, and felt this had resulted in a lack of appropriate assistance available to them, at this important junction of their lives.
- ❖ Given the evidenced (e.g., Hyde et al. 2009) value of support services available to DHI students at the tertiary level, and the fact that 85% of the students in this study accessed these support services, it would seem the same type of supports could be of value to students in the compulsory education sector. While it may not be necessary to have a specialist teacher of the deaf to support some students in the mainstream, it may be appropriate to provide notetakers, sign language interpreters and to implement other forms of technology to assist these students prior to transition to tertiary study.

Accessing the curriculum

- ❖ Receiving appropriate accommodations depended on students knowing how to access support services, understanding various support roles, and an ability to self-advocate or have someone advocate, at least initially, on their behalf.
- ❖ Participants identified that they could no longer rely on services provided, or organised by, a staff member specifically employed to assist them. Many had remarkably little knowledge about the roles of notetakers, interpreters, or other

tertiary staff, such as tutors, as these had not usually formed part of their high school education.

- ❖ Being able to self-identify support needs confidently and knowledgeably was a valuable skill, and often one that students had not been required to implement at secondary school. Some students were comfortable with disclosing their needs and received support from peers and academic staff; others were less willing and, as a result, found gaining accommodations and interactions with staff and other students, more difficult.
- ❖ The majority of survey respondents reported that their hearing loss significantly affected their ability to participate in learning environments, mainly lectures (70%) and tutorials (60%).
- ❖ While having more DHI peers was one advantage of the larger institutions, it appeared that being ‘bigger’ was not necessarily ‘better’ when it came to the resources provided to improve access to the whole spectrum of campus life.
- ❖ There was a high use of disability support services (85%), with the most frequently accessed services being manual or peer notetaking services (66%), interpreters (25%) and electronic notetaking (ENT; 20%).
- ❖ As with many other countries, the quality and availability of interpreters available to fill the needs of students who rely on sign language as their main mode of communication, was lacking. At times, participants felt that their interpreters were not qualified or experienced enough to convey the content of lectures effectively, and this was a source of frustration for the students.
- ❖ Lecturers often did not have enough knowledge about the DHI students’ needs or adequate “deaf awareness” to understand how to work successfully with an interpreter, or ways to enable the student to maximise any learning situation. However, a majority of students who received interpreter services expressed

overall satisfaction with interpreters and lecturers, and acknowledged that working at this level posed multiple challenges for staff.

- ❖ There were numerous concerns about notetaking services, including the quality and timeliness of notes received. Students identified trained notetakers as a far superior service to the peer notetakers arranged by most institutions. Electronic notetaking was seen by students as preferable to manual notes from peers or dedicated notetakers, with 77% of users reporting that they found this service ‘very’ or ‘extremely’ useful. Students who used NZSL also expressed a preference for ENT in certain circumstances, and there is the potential to use this form of technology to overcome some of the interpreter shortage issues.
- ❖ Barriers directly associated with the courses themselves, included (a) the amount of group work involved, (b) the delivery style (for example, lecture, lab work, web-based), (c) lecturers with significant facial hair or ‘accents’ or a chaotic teaching style, and (d) insufficient classroom lighting, noisy, or faulty equipment and poor acoustics.

Interactions with others

- ❖ Students described positive experiences with lecturers and tutors, and gave examples of staff who they felt were aware of their needs as a deaf student, and who had provided them with appropriate learning environments. In fact, 57% of the survey respondents indicated they were ‘very satisfied’ with the teaching they received, and 59% were ‘very satisfied’ with the attitude of the staff. A few expressed their disappointment with the attitudes and behaviours of academic staff, often feeling ignored or belittled because of their hearing loss.
- ❖ Participants felt it was crucial that staff receive “deaf awareness” training prior to having a DHI student in their class. This would include information about

appropriate communication methods and other aspects, such as working with interpreters.

- ❖ Building healthy relationships with other students, (both hearing and deaf), as well as academic and support service staff, was important. Approximately one-quarter of the DHI students in the study, were dissatisfied with both the number of friends they had in-class, and the out-of-class contact they had with their peers. These students, however, demonstrated a level of acceptance over the lack of social contact they had with other students.
- ❖ Students in this study recognised that participating in the wider aspects of campus life produced a positive effect on their feeling of ‘belonging’ and their overall tertiary experience. Students who relied on sign language as their main form of communication lamented the lack of support services available for non-academic activities, and those who used their residual hearing and lip-reading skills frequently found that the activities were arranged in such a way, that they were not conducive to their participation.
- ❖ The extra time and effort it took simply to stay abreast of their studies, meant students often felt they did not have the time or energy to participate in non-curricula activities. Their solutions to this lack of social engagement were to continue to associate with a small group of friends, usually from high school, or to socialise with other deaf or hearing-impaired people at venues such as Deaf clubs.
- ❖ A number of participants in this study reported difficulties building positive and effective relationships with the disability support staff. There were a variety of reasons for this including the perceived attitudes, and lack of knowledge about deafness of some staff, and difficulties with communication. Further, some participants found themselves having to justify requests for services or

accommodations that they felt were logical or requesting intervention from other services or outside agencies to settle disputes.

Many students described feelings of academic success, and provided suggestions and recommendations for future DHI tertiary students. The next section reviews those suggestions, and includes further recommendations for academic and administrative staff, other students, and disability support services, which might make DHI students' tertiary educational experiences more satisfying and successful.

Implications for practice

Inclusion is a multifaceted concept and interpreted in many different ways, depending on various historical and cultural traditions, policy frameworks, and economic priorities within which an education system operates. Balancing the services and support needs of individuals, and yet ensuring that the rights of all students are preserved, is an ongoing challenge. The recommendations in this section provide guidance for all stakeholders including (a) DHI students, (b) hearing peers, (c) academic staff, (d) support staff, and (e) administrators of disability services in tertiary institutions.

To participate successfully, the students stated that learning to communicate effectively with a wide range of people was a vital skill required in the tertiary education environment. Many expressed a degree of loneliness or isolation linked strongly to communication challenges, both inside and outside their formal learning environments. Several suggestions were forthcoming, including encouraging more DHI students to consider tertiary study as an option. While these students recognised that recruiting DHI students was not necessarily a priority for academic institutions, there was a suggestion that institutions could increase the size of their DHI cohort by becoming more 'deaf-friendly.' Further, students who used sign language felt that

attending an institution that had a larger DHI population would make tertiary study easier.

The qualitative data indicated that students placed a strong emphasis on the need for DHI students to have strong self-advocacy skills, to understand their own learning styles, and to be familiar with the range of resources available, including new technology. Students need assistance to develop these skills prior to entering tertiary education, and therefore, decisions should be made about whose role it is to ensure these students do not ‘fall through the cracks’ and that they have the opportunity to make a successful transition to tertiary education. School counsellors could have the responsibility for this skill building, but may not have the appropriate skills to cater successfully for DHI students’ specific needs in this area. This is despite New Zealand’s National Administration Guidelines stating that all schools should:

Provide appropriate career education and guidance for all students in year 7 and above, with a particular emphasis on specific career guidance for those students who have been identified by the school as being at risk of leaving school unprepared for the transition to the workplace or further education/training. (NZ Ministry of Education 2009a, p. 5)

Perhaps responsibility should also fall to the RTD, although this may not be effective in reaching all DHI students, given that this study’s findings show that not all students receive regular itinerant support throughout their secondary schooling. Responsibility for ensuring students are provided the opportunity to acquire these valuable skills and knowledge could further lie with the AODC, but a better option could be collaboration between schools, tertiary education providers, and Deaf Aotearoa New Zealand (DANZ). DANZ already has a resource available “DEAFinitely Stepping Ahead” which is described as:

A programme specifically designed for D/deaf or hearing-impaired students in their last year or two of school who are thinking about further education, training, or looking for their first job. (DANZ, n.d., p.4)

To date, remarkably few students have availed themselves of the opportunity this programme offers (DANZ, personal communications, May 2011). Therefore, it would seem desirable to incorporate this programme, or something similar, into the students' secondary school programme at least two years prior to their leaving school. For example, English, (1999) describes a self-advocacy course designed for deaf students in the United States that comprises a basic set of questions students work through with their RTD. For those students who do not have RTD support, a structured workshop-style programme provided to groups of DHI students could be beneficial. At present, New Zealand has several deaf youth groups that have organised "deaf camps" where DHI young people spend several days together in an organised programme. As well, RTDs arrange "Keeping in Touch" (KIT) days once a term for students on their caseloads to get together and socialise, usually as part of a combined activity. Such events could be a valuable way of encouraging the development of communication and self-advocacy skills, social relationships, and an understanding about assistive technology and support services available in the tertiary sector. These events would need to be structured, and supported by facilitators or mentors who have excellent communication skills and knowledge about DHI students' needs, the tertiary education system, and transition issues. In essence, there would seem to be significant value in the appointment of 'transition advisors' for DHI students under the umbrella of either the DANZ or the Ministry of Education.

The Internet is another potential source for the dissemination of information. Internet usage is high among the adolescent population generally, with DHI students

drawn to the visual nature of this medium. To reflect New Zealand legislation and educational policies, modified resources based on programmes already available on-line, could be utilised. An example would be a resource developed in the United States, *A nuts and bolts guide to college success for deaf and hard of hearing students* (Bourgeois & Treubig, 2002), that provides information to support successful transition, suitable for students in their last years of high school. This programme includes self-advocacy skills, understanding, and requesting accommodations, campus life, and other academic issues. As another possibility, translating the *DEAFinitely Stepping Ahead* programme (DANZ, n.d.) to an on-line resource, with the addition of a person taking the role of an 'on-line mentor' would be both individualised and cost-efficient. The ideal would be to track these students for a year after transition to determine the level of success of the programme. Not only would this allow a more tailored programme for students' needs, it would also give students a deaf-friendly mentor or advisor outside the tertiary institution's disability support service. In the current study, many students felt their communication and academic needs were not well understood by tertiary staff, and wished they had someone like an AODC to contact.

Within tertiary institutions, increased awareness of DHI learners' academic and social needs is required. Disability coordinators who support DHI students must learn to communicate more effectively with them, or be able to seek support in doing so. Providing such awareness to other tertiary staff, by offering workshops and seminars should be part of their position. Further, if at all practicable, each disability office should be involved in institutional planning to overcome issues such as poor acoustic environments, poor lighting, and faulty equipment that restrict access to learning. Most disability coordinators in New Zealand tertiary institutions do not currently have the in-depth working knowledge required to support DHI students at this level successfully. This is not a reflection on, or criticism of, coordinators themselves, as they are not

specialists in any one area, but support students across a wide range of disabilities and learning difficulties. It is, therefore, unreasonable to expect the necessary level of expertise within a generic service, and the availability of specialist resources would be beneficial. In compulsory education, policies, practices, and systems support DHI students and promote their inclusion. Therefore, it seems inconsistent that once a student leaves high school, the Ministry of Education discontinues these specialised academic and communication supports, even though the DHI student's education is continuing. For example, an 'on-line mentor' as part of a transition programme described previously, could be one solution to the lack of specialised knowledge and support described by some DHI student in the tertiary sector, and could also be used to capture valuable evidence about the effectiveness of such services, and track the needs of DHI students across the country.

Provisions for DHI students in tertiary institutions should include a formal mentoring system, giving access to peer relationships and experiences, and the opportunity to socialise and interact with their hearing peers, as they too play a crucial part in the inclusion of DHI students. Initially, this may need to be organised by the disability support office rather than left to chance, and could reduce the prospect of DHI students becoming socially isolated. Further, if hearing peers are aware of the communication strategies for use with deaf colleagues, this can pave the way for successful student-to-student interactions. With that in mind, participants suggested these simple strategies to improve communication; facing the person, repeating information or questions if required, writing things down, email, text, choosing a quiet workspace, and paying attention to seating arrangements. Additionally, students made recommendations about extra-curricular activities, stating they were a key part of the overall tertiary experience and should be accessible. Making tertiary institutions accessible includes ensuring interpreters or captioners are available at events and activities, thus, enabling

meaningful interactions between DHI and hearing students, outside formal lecture and tutorial situations.

In addition, specialised training is required for notetakers and educational interpreters, so that the work they do strengthens the DHI students' access to learning in tertiary education. One of the largest barriers currently in New Zealand is that there is only a two-year diploma level course for NZSL interpreting available in Auckland. There is an urgent need to increase the number of appropriately qualified interpreters available. It would make sense to offer the current course in alternative formats such as modular blocks or parallel courses in other regions, perhaps on a rotating basis, as well as providing alternative accreditation pathways such as are offered in Australia by the National Accreditation Authority for Translators and Interpreters Ltd (NAATI, 2011). Tertiary institutions have a responsibility to ensure that they only employ appropriately qualified and experienced interpreters, and support their on-going professional development to obtain appropriate post-graduate qualifications. Similarly, tertiary institutions have a responsibility to train notetakers, in both manual and electronic formats, so they can support DHI students appropriately. Training resources available from the US, UK or Australia enables the training of notetakers in a reasonably short timeframe. One New Zealand university currently does this well, and consequently has a successful notetaking support programme with skilled notetakers.

Teaching professionals play a crucial role in ensuring optimal inclusion at all levels of the education system. Tertiary education staff need to recognize, that while qualified interpreters and notetakers provide a degree of communication and access, lecturers and tutors are ultimately responsible for course delivery and learning. Further, teaching staff need to consider how to develop and offer course information, lectures, assignments, and examinations in the least restrictive teaching environment. Adams and Brown (2006) describe an underlying theme of inclusive practice in this way:

A flexible approach to learning, teaching, and assessment needs to be seen as the norm, rather than as an exception for a few. This debate is not about the dilution of academic standards but recognition of difference and the creation of a rigorous framework that reflects that position...good practice for disabled students is generally good practice for all students. (p.4)

The development of appropriate teaching strategies and course communication, such as providing lecture summaries, web-based resources, or simply pausing after asking a question to a group, can facilitate, and vastly improve, the inclusion of both DHI and hearing students by giving them additional time, and alternative ways to access and process information. Designing courses that are more accessible can also help staff avoid making one-off adjustments for individual student needs (Doyle & Robson, 2002). However, several students reinforced the fact that it was essential others see them as individuals, not as a homogenous group; not all students who have hearing loss communicate in the same way, or have the same abilities or needs. For students who rely on assistive hearing devices and lip-reading, there is a need for a greater awareness of their communication and resource needs. For students using sign language, encouraging the use of NZSL through offering classes on campus, free of charge to those staff and students interested, is a practical way to support this process of understanding (Mudgett-DeCaro & Foster, 1992). Signing students envisioned NZSL eventually being offered as a subject for credit alongside other spoken languages, a reasonable suggestion given that it is now New Zealand's third official language.

Implications for tertiary institutions and policy

With only small numbers of DHI students enrolled in New Zealand tertiary institutions, how realistic is it to expect all institutions to be able to provide inclusive

environments with positive outcomes for this group of learners? Mudgett-DeCaro and Foster (1992) and Brown and Foster (1991) observed that mainstreamed postsecondary students reported experiences of loneliness, rejection and isolation, and students in this study confirmed these feelings in their qualitative responses. Therefore, a structure of service provision for education that allows access to tertiary education programmes alongside other DHI peers may, for many, be the most appropriate means to access tertiary education, and enable optimal social interaction. Clustering DHI students in one or two tertiary institutions in New Zealand would provide economies of scale, and make it more likely DHI students' social needs would be met in an environment that is supportive and knowledgeable (Deaf Education Access Forum Postsecondary Education Working Party, 1999; Dugdale 2001; Nealy, 2007). Access to deaf peers, role models, mentors, Deaf studies, NZSL models, and Deaf staff would be of significant benefit socially and culturally, and have the effect of rationalizing the allocation and coordination of support services, thereby reducing inefficiencies and inequities.

With this model in mind, the Tertiary Education Commission (TEC) attempted a centralisation of resources when the Centre for Excellence opened in Auckland, initially as a two-year pilot study, in early 2004. The goal was to support the recruitment of DHI students into tertiary education by enhancing opportunities, and removing barriers to participation and access. The philosophy for the Centre of Excellence was based on overseas' models, specifically City Lit in the United Kingdom, El Camino Community College and Pierce College in the United States and Griffith and La Trobe Universities in Australia (Deaf Education Access Forum Postsecondary Education Working Party, 1999). The Centre's brief was to provide, or facilitate, the availability of human and technical resources, such as interpreters, notetakers, and technological support. Resources were coordinated centrally, to ensure students studying in the Auckland region had the access to support they required. Training programmes for DHI students

in foundation areas such as literacy and numeracy, and the training of notetakers and tutors were envisaged (Blackall, 1998). Unfortunately, this centre closed in 2010 for reasons that were not publicly disclosed; to date no replacement service has been made available. While establishing dedicated facilities for DHI students in a small number of tertiary institutions may make better use of scarce resources, it can never replace the right that DHI students have to attend their local institution. This is particularly the case in the current research that found that course availability was such an important choice factor for many students. More research in this area is needed before making such a recommendation, as there would be implications for tertiary institutions, funders, and policy makers.

Tertiary institutions need to view DHI students as a diverse group with individualised needs. If they do not recognise that provision of services to this group is complex, it is unlikely that administrators will allocate sufficient funding to guarantee appropriate supports are available. Ensuring the tertiary education system has the capacity to be fully inclusive, requires forecasting future DHI student numbers, and identifying the potential costs of support required. Currently this is not the case, and institutions frequently do not know what the DHI student's needs are going to be, or even how many students they might have to provide services for, until the students arrive in the first week of semester. Compounding this issue is the fact that data available about DHI students in New Zealand are extremely limited, despite a specific recommendation to develop a centralised database to track students, in the New Zealand National Foundation of the Deaf's report regarding access to tertiary education (Logan, 1995). DEANZ, in 2005, undertook to compile a database of children identified as having some degree of hearing loss on behalf of the Ministry of Education. The DEANZ database however, "is not considered robust and many of the records are either incomplete or incorrect" (B. Coffey, Ministry of Education Group Manager- Strategy,

Special Education, personal communication, 27th October 2010). The database does not record basic information, for example, about the type of school attended, or whether students are supported by a RTD or AODC. There are no records of qualifications gained, or whether students went on to tertiary study or employment, at the conclusion of their compulsory education. Without these essential baseline data, it is impossible to determine support needs for DHI students transitioning from secondary school in New Zealand, or ultimately, to develop strategies and policies to improve outcomes. Based on the findings of the present study, and on the recommendations of previous government and NGO reports, the New Zealand Ministry of Education should develop a robust and accurate database of all DHI children currently in the compulsory education system. It would be desirable to extend the database to incorporate final exam results, proposed post-school destination/s, and track educational or vocational transitions upon leaving school. This would help ensure that DHI students receive appropriate and timely assistance to be rightfully able to achieve their educational and vocational goals as identified in Article 24 (5) of the UNCRPD (2006).

Implications for future research

An ultimate objective of this, and any related future research, is to improve practices and policies that will augment and expand opportunities and outcomes for DHI tertiary students. As identified, in the current context of New Zealand, one of the first tasks should be the compilation of accurate statistics, including those DHI students (a) intending to undertake tertiary education, (b) currently studying at tertiary level, and (c) their tertiary completion rates. Further, examination of issues of access and equity at the tertiary education level for DHI students, including the effects of academic preparation, teacher, student and family expectations, is required. Undertaking research to collect such data would assist in identifying current and future enrolment trends, and

enhance the current body of knowledge about DHI learners in New Zealand. It would also provide a basis for adequate policy development, and resourcing of DHI students' needs for inclusion in tertiary education.

In addition, collecting longitudinal data on a cohort of students, beginning at secondary school, following them through tertiary education to completion, and into the labour market, would provide valuable data notably absent in this country. Findings could assist aligning transition programmes to DHI students' needs, assist tertiary institutions become more knowledgeable and adept at meeting the needs of this group of learners, and assist students themselves to make successful transitions into the workforce. The National Plan for Deaf Education identified under Principle 3 that there would be planned and coordinated procedures for transition periods, and specifically mentions leaving school and moving to participate in the community and/or tertiary education as objectives (DEANZ, 2005). Therefore, research that explores the institution and programme choices made by New Zealand DHI students, and the factors that influence their career decision-making, would be beneficial.

Research that included disability coordinators and teaching staff of DHI students to ascertain their current knowledge, attitudes, support provisions, accommodations and use of technology would be informative, and identify areas of effective practice that could be shared and utilised by other institutions or staff. Such research would further inform policy and practice within government authorities and institutions, and provide a roadmap for future additional improvements within the tertiary education sector. Such a roadmap, ideally undertaken at a government level could follow the New Zealand model already devised for Māori learners in tertiary education, *Working with Māori 2004-07* (TEC, 2004). Its focus could consist of three broad aims, (a) assisting DHI learners to succeed in education, (b) encouraging education providers to be responsive to DHI learners' aspirations and needs and, (c) ensuring the compulsory and tertiary

education sectors have the capacity to be inclusive of DHI learners. Implementing this model for DHI learners would be one way of addressing their specific needs and aspirations related to tertiary education and meet government expectations that tertiary institutions will “enable a wide range of students to successfully complete degree and postgraduate qualifications” as part of the *Tertiary Education Strategy 2010-2015* (Ministry of Education, 2010d, p.8).

Limitations of the study

This study included volunteer participants, and could be considered a small sample, albeit of a limited population of DHI participants in tertiary education in New Zealand. It is necessary to acknowledge, that students who elected to take part in this study, may not fully represent the complete set of characteristics of New Zealand DHI students currently enrolled in tertiary education. Further, the study involved self-report methods and these can involve some degree of slippage among the views of participants and with actual events. However, given the small number of DHI students in tertiary education in New Zealand, the sample had a good representation of gender, age, and degree of hearing loss. As well, there was a mix of communication modes, a variety of tertiary institutions attended, and appropriate geographical representation. Additionally, the purpose of qualitative findings is not usually for generalisation, but instead, provides insights into the experiences and perceptions of the study participants. Therefore, while the results presented here are the perceptions and experiences of DHI students who chose to respond, these insights are valuable and necessary to provide recommendations that can inform and enhance both government and tertiary institutions’ policies and support services. Viewing the study as an initial investigation is appropriate, and additional research on this topic as identified should be undertaken.

Concluding remarks

This study investigated the learning and social participation experiences of New Zealand DHI tertiary education students. The study is significant in that it provides information to prospective students, tertiary education support personnel, policy-makers, and researchers focused on this specific student population. In addition, the study expanded on limited research available on the topic of DHI students in mainstream tertiary education institutions, particularly in New Zealand.

Mainstream tertiary educational settings can pose unique challenges for DHI students and those who seek to provide appropriate resources. Tertiary institutions not only need to develop systems and procedures that assist these students to be included in the range of tertiary education experiences, but also work from the principle of empowering the student to become independent. The factors of choice, access, and empowerment should be to the forefront of any move towards inclusive tertiary education where both deaf and hearing students are equal and valued participants.

Powers (1996, 2000) was of the opinion that inclusion is a philosophical concept based on community membership, and is a value system, not a place, or a particular set of learning circumstances. Using that particular lens, I believe there is a genuine desire within New Zealand tertiary institutions to provide DHI students with an inclusive education. However, inclusion in the tertiary system still seems to focus on 'a place or set of learning circumstances' rather than community membership and participation. Many disability coordinators and their respective institutions, focus on students' academic inclusion, believing that is what inclusion consists of. It is of concern, that the tertiary education system does not currently address students' social inclusion or development as independent learners, in any intentional way.

In conclusion, while more DHI students are reaching the entry point of tertiary education due to the resources and support in the compulsory education system, we do

not know how many are completing their courses of tertiary study. Tertiary institutions have a legal responsibility to provide equitable access to education, and the recommendations made in this thesis may go some way to ensuring DHI students experience inclusion in a meaningful way.

My hope is that the results of this study, in combination with further research, will enhance the implementation of both government and tertiary institutions' policies into practices that benefit DHI tertiary students, and ensure they are receiving an equitable education alongside their hearing peers. Without the achievement of full inclusion, these students will continue to fall short of realising their full potential and our tertiary institutions, and ultimately New Zealand society, will be the poorer for it.

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APPENDICES

Appendix A

Information letters and consent forms

Project: New Zealand deaf students' experiences in tertiary education

Dear (Disability coordinator's name)

As discussed previously, attached is the information I would appreciate being sent to all students who have identified as being Deaf or hearing- impaired at your institution. I would be grateful if you could inform me how many students you send the letter to. Of course I don't want any names, just numbers, as that way I will know what level of response there may be.

If you have any further questions please don't hesitate to get in touch. Once again thank you so much for your willingness to be involved in, what I hope will be, a significant move forward for the provision of services for this group of students.

Yours sincerely,

Denise Powell

EdD Candidate

Griffith University

The learning and participation experiences of D/deaf and hearing-impaired students currently studying at New Zealand tertiary institutions.

Greetings!

My name is Denise Powell and I am writing to ask if you would be interested in taking part in a research study that I am doing as part of my Doctor of Education. The study will be looking at the experiences of D/deaf and hearing-impaired students currently studying at New Zealand tertiary institutions. The reason for doing this study is to see what barriers you feel you currently face, and to try and find solutions to those barriers. The aim is to make the tertiary education experience better for all D/deaf and hearing-impaired students in New Zealand.

If you are interested I will send you a questionnaire to fill out which should take about $\frac{1}{2}$ hour to complete. The survey can be done anonymously if you wish. No information about whether you take part, or any information you provide will be given to the tertiary institution or support services.

Attached is a copy of the brief information sheet about the study. For privacy reasons your contact details have not been given to me and so I will only know you are interested if you send an email to Denise.powell@student.griffith.edu.au I can then send more detailed information about the study so you can make an informed decision, and a copy of the questionnaire for you to complete if you agree to take part.

I look forward to hearing from you so we can get as many people as possible to contribute their ideas and experiences to this research which will hopefully improve the services and education D/deaf and Hearing-impaired students receive from tertiary education institutions in New Zealand. If you have any questions please send me an email and I will respond to you directly.

All people filling in the questionnaire will go into a draw to win a \$100.00 book voucher!!!!

Thanks so much for your time,

Denise Powell

Denise.powell@student.griffith.edu.au



Brief Information Sheet

This form outlines the purpose of the study and provides a description of your involvements and rights as a participant.

The purpose of this project is to gain an understanding of your experiences as a deaf student at a tertiary institution in New Zealand.

The method to be used to collect information is as follows:

1. An individual written survey/ questionnaire which collects background information about you and your thoughts about the experiences you have had at university/polytechnic.

I guarantee that the following conditions will be met:

1. Your real name will not be used at any point of information collection, or in the written study; instead you and any other person or place names involved, will be given pseudonyms that will be used in all verbal and written reports. You will be given a coded number, which identifies your answers. The identity code key and the data will be kept separate and locked away.

2. Your participation in this research is voluntary; you have the right to withdraw at any point of the study, for any reason, and without prejudice, and the information collected and the records and reports written about you will be turned over to you.

You are encouraged to ask any questions at any time about the study and the methods that I am using. Your suggestions are important to me; please contact me with any questions or suggestions you may have.

The ethical conduct of this research

Griffith University conducts research in accordance with the *National Statement on Ethical Conduct in Research Involving Humans*. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Manager, Research Ethics on (61) 73875 5585 or research-ethics@griffith.edu.au.

Privacy Statement

The conduct of this research involves the collection, access, and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University's Privacy Plan at www.griffith.edu.au/ua/aa/vc/pp or telephone (61) 73875 5585.



Information sheet

Why is the research being conducted?

The aim of the project is to identify deaf students' experiences and examine the effectiveness of the inclusion policy in the New Zealand context in order to provide recommendations that will aim to address barriers and enhance the implementation of policy into practice. Knowing and understanding deaf people's experiences in the tertiary education sector can provide valuable information for professionals and programmes that serve students who are deaf.

What you will be asked to do

If you agree to take part in this research you will be asked to fill in a written questionnaire about your experiences including your expectations, the challenges faced, the services accessed and your overall satisfaction with your learning and participation experiences. From those completing the survey, a number of students will be selected based on their ability to represent and expand on aspects of the quantitative results in a face-to-face interview. If you are willing to be involved in these face-to-face interviews there will be another information sheet and consent form for you to sign. The interviews will be done in a place and at a time convenient for you. There will also be an interpreter available should you wish to have one present.

The basis by which participants will be selected or screened

Prospective participants will initially be identified by their own institution's disability support services. The students will then be contacted via email to invite them to participate in the research. Prior to data collection, the researcher will inform the participants of the purpose of the study, providing each respondent with an informed consent form which outlines the purpose of the research, the process used and the ability to withdraw at any stage without impact on any of the services they receive.

The expected benefits of the research

Increased successful outcomes for deaf students in the tertiary sector. Increased awareness of the barriers faced by deaf students and ways of overcoming those barriers. Increased awareness of how to best support deaf students in the tertiary environment

Risks to you

There are no risks. The data received from the participants will be kept in a locked file cabinet. Once the researcher has transcribed and analysed the information it will be kept for a period of five years and then destroyed.

Your confidentiality

There will be no personal information from the participants published. None of the participants involved in this research can be identified in any way in any of the published material.

Your participation is voluntary

This is a non-funded research. The researcher requests the participants to participate in this study on a voluntary basis. There are no potential risks to any of the participants involved, and if at any given time during the course of the research any participant wishes to withdraw from the research then they may do so. Upon the completion of the research, an approved final report will be provided to the participants involved who request a copy.

The ethical conduct of this research

Griffith University conducts research in accordance with the *National Statement on Ethical Conduct in Research Involving Humans*. If potential participants have any concerns or complaints about the ethical conduct of the research project they should contact the Manager, Research Ethics on (061) 73875 5585 or research-ethics@griffith.edu.au.

Privacy Statement

The conduct of this research involves the collection, access, and / or use of your identified personal information. The information collected is confidential and will not be disclosed to third parties without your consent, except to meet government, legal or other regulatory authority requirements. A de-identified copy of this data may be used for other research purposes. However, your anonymity will at all times be safeguarded. For further information consult the University's Privacy Plan at www.griffith.edu.au/ua/aa/vc/pp or telephone (061) 73875 5585.



CONSENT FORM

By signing below, I confirm that I have read and understood the information package and in particular have noted that:

I understand that my involvement in this research will include the completion of a written questionnaire.

I have had any questions answered to my satisfaction.

I understand that there will be no direct benefit to me from my participation in this research apart from the fact that I can chose to enter into a draw for a book voucher.

I understand that my participation in this research is voluntary.

I understand that if I have any additional questions I can contact the researcher.

I understand that I am free to withdraw at any time, without comment or penalty.

Do you grant permission to be directly quoted anonymously?

Yes No

Do you grant permission for the interviewer to contact you to arrange a face-to-face interview about your experiences?

Yes No

If yes, please provide your name and an email address or fax number so I can contact you.

I understand that I can contact the Manager, Research Ethics, at Griffith University Human Research Ethics Committee on (061) 73875 5585 (or research-ethics@griffith.edu.au) if I have any concerns about the ethical conduct of the project; and

I agree to participate in the project.

Name

Signature

Date

Appendix B

Questionnaire and Interview Questions

Academic and Social Experiences in Tertiary Education

1. **How old are you?** < 20 ☐ 20-30 ☐ 31-40 ☐ 41-50 ☐ 51+ ☐
2. **Are you?** Male ☐ Female ☐
3. **How would you describe your hearing loss?**
 - Mild ☐
 - Moderate ☐
 - Severe ☐
 - Profound ☐
4. **When did your hearing loss occur?**
 - At birth ☐
 - Later in life (record your age) ☐
 - Degenerative hearing loss ☐
5. **What language do you consider to be your primary form of communication in everyday life?**
 - Spoken English ☐
 - NZSL ☐
 - Signed English ☐
 - A spoken language other than English ☐
 - Other (please specify) ☐
 - A combination (please specify)..... ☐
6. **What is your primary cultural and/or linguistic affiliation?**
 - Mainly as associating with a hearing community ☐
 - Mainly as associating with a Deaf community ☐
 - Mainly as associating with a bicultural and/or bilingual identity ☐
 - Other (please specify) ☐

7. When you were at primary school, did you attend:

- A regular school with support from an itinerant teacher of the deaf ☐
- A regular school without support from an itinerant teacher of the deaf ☐
- A regular school with a special education unit for deaf students ☐
- A school for the deaf ☐
- Other (please specify)..... ☐

8. When you were at high school, did you attend:

- A regular school with support from an itinerant teacher of the deaf ☐
- A regular school without support from an itinerant teacher of the deaf ☐
- A regular school with a special education unit for deaf students ☐
- A school for the deaf ☐
- Other (please specify)..... ☐

9. What was your highest school qualification?

- None ☐ School Certificate ☐ NCEA 1 ☐ 6th Form Certificate ☐
- NCEA 2 ☐ University Entrance ☐ Higher School Certificate ☐
- Bursary ☐ NCEA 3 ☐
- Other (please specify).....

Tertiary Studies**10. What course/s are you studying – please list eg, Bachelor of Education****11. Which tertiary institution do you attend?**

12. Why did you decide to study at or through that institution?

Someone told me they had support services for Deaf and hearing impaired people ☐

They had the course I wanted to study. ☐

I knew other Deaf /hearing impaired people who had studied through that university. ☐

Other (please specify): ☐

13. Did anyone help you with the process of applying?

Parents ☐

Siblings ☐

School teachers ☐

Friends ☐

Community Organisation ☐

Institution's own staff ☐

Other (please list) ☐

14. Are you a part-time or full-time student?**15. What year did you start your studies?****16. When do you intend to complete your studies?****17. What are some of the major challenges you experience with your studies?****18. What are some of the highlights or good things about your time in tertiary education?**

19. Which communication tools do you use during your studies and how useful are they?

	1 Very little	2 A small amount	3 A fair amount	4 Quite a lot	5 A great deal	Didn't use
Interpreters						
Manual note taking / peer note taking support						
Laptop computer note taking e.g. C-print or Stereotype						
Cochlear Implant						
Hearing aids						
FM aids						
Induction loop						
Technological aides such as, TTY's, National Relay Service, Text messaging						
Email						
Video conferencing						
Blackboard						
Other (please list)						

20. If you said that you use hearing aids or have a Cochlear Implant can you comment specifically on you how often you make use of that form of amplification?

a. While studying

	1 Not often	2 A small amount	3 A fair amount	4 Quite a lot	5 A great deal	6 Didn't use
Cochlear Implant						
Hearing aids						

b. In your life outside of tertiary study

	1 Not often	2 A small amount	3 A fair amount	4 Quite a lot	5 A great deal	6 Didn't use
Cochlear Implant						
Hearing aids						

21. If your answers were different for tertiary study and everyday life can you explain this difference?

22. Did you access the disability support services offered by the tertiary institution?

Yes ☐ **No** ☐

If yes - How useful were the support services?

	1 Very little	2 A small amount	3 A fair amount	4 Quite a lot	5 A great deal	Didn't use
Disability Coordinator Support						
1-1 Tutor Support						
Other – (please specify)						

23. Did you access any of the generic services offered by the tertiary institution?Yes ☐ No ☐

If yes - how useful were they?

	1 Very little	2 A small amount	3 A fair amount	4 Quite a lot	5 A great deal	Didn't use
Learning assistance						
Careers advice						
Personal counselling						
Welfare services						
Student associations (please specify)						
Other (please list)						

24. Did you access any external supports outside the tertiary institution during your studies?Yes ☐ No ☐

If yes, how useful were they?

	1 Very little	2 A small amount	3 A fair amount	4 Quite a lot	5 A great deal	Didn't use
Deaf Association or other Deaf community organisations						
Family						
Friends						
Personal supports like other Deaf people						
Other (please specify)						

25. To what extent do you feel your hearing loss affects your ability to participate in:

	1 Very little	2 A small amount	3 A fair amount	4 Quite a lot	5 A great deal
Lectures					
Receiving instructions or supervision					
Tutorials					
Accessing services					
Casual interactions with other students					
Social functions					
Other (please specify)					

26. Before you started your study, did you think there would be any difficulties (barriers or obstacles to achieving your goals) related to your hearing loss? If yes, please describe the difficulties you thought you might have.

27. To what extent did you experience any of the barriers or difficulties you thought you might have?

28. Have any other barriers or difficulties happened that you did not expect to happen?

29. Please describe any solutions you have developed to address the barriers or difficulties that you experienced.

30. How satisfied are you with your experience so far of tertiary education?

	1 Not at all satisfied	2 Not very satisfied	3 Somewhat satisfied	4 Very satisfied
With the teaching I received				
With the number of friends I have in class				
With the people from university who I have contact with outside of class				
With the attitude of staff				
With the attitude of other students				

31. What are the reasons for your satisfaction or dissatisfaction?**32. What recommendations or comments would you make to Deaf and hearing impaired people thinking about going to university in the future?****33. When you enrolled at university, did you declare your hearing loss on the enrolment form?**

Yes ☐ **No** ☐

If the answer was no can you explain why you didn't declare your hearing loss at that point?

Thank you for taking the time to answer these questions. Your experiences will help in making the record of events more meaningful for all the D/deaf and hearing impaired students who have studied at a tertiary institution in New Zealand.

Please return the completed consent form and questionnaire in the envelope provided or by return email to denise.powell@student.griffith.edu.au

Interview starter questions –**Student background information –**

Name, age, university attending, courses, career goals

Identity –

How do you see yourself - Deaf /deaf H/imp HOH

Has your identity changed over time?

Do you ‘swap’ identity depending on situation?

Family of origin –

Tell me about your family.

How would you describe your relationship with your family?

How do you communicate at home?

Has anyone in your family attended tertiary education before?

Perception of academic readiness –

Do you feel your high school experiences prepared you for tertiary education?

Is your tertiary experience the same or different from your high school experiences?

How well prepared do you think you were for university study in terms of your reading ability etc.

How did you decide on your major?

Perception of social readiness –

What concerns did you have about how you would ‘fit in’ at university/polytech?

How would you describe your social life at high school?

And how would you describe your social life at university/polytech?

Perception of emotional readiness

What was your biggest concern when you thought about going to university/polytech?

What was the thing you looked forward to the most about being at university/polytech?

Perceptions of social, emotional and academic experiences*Academic*

What is your experience in the tertiary learning environment – lectures, tutorials, study groups?

How do you feel about your interaction with other students? Lecturers? Tutors?

What do you do when there is group discussion?

How do you feel about your academic achievement so far?

What kind of support systems do you use? What is it like to use an interpreter/ notetaker in class?

Social

Describe your social life at university/polytech. Friends, flatmates etc....

How do you interact with other people on campus? How do you feel about the communication that you have with other students? Can you give some examples of positive and /or negative interactions?

If you have a problem at university/polytech who do you talk to?

What activities are you involved with at university/polytech?

Overall experience

How would you describe your overall experience at university/polytech?

Is it similar to what you predicted?

What is your overall feeling about your experience at university/polytech?

If you could change anything what would that be?

Questions related to responses from written survey –

Major challenges?

Communication tools?

Support services?

Participation?

Solutions to barriers encountered

Recommendations to other students

Appendix C

Participants' course of study

Qualification	Frequency	Percentage
<i>Undergraduate</i>		
B.Arts	12	18.8
LLB	5	7.8
B.Sc	4	6.3
B. Com	4	6.3
B. Social Work	3	4.7
B.Ed	2	3.1
B. Nursing	2	3.1
B Music	1	1.6
B. Theology	1	1.6
B. Engineering	1	1.6
B. Speech Language Therapy	1	1.6
B.Medicine	1	1.6
B. Visual Arts	1	1.6
B. Applied Science	1	1.6
Certificate in Deaf Studies	1	1.6
Certificate in NZSL	1	1.6
Dip. Culinary Arts	1	1.6
<i>Postgraduate</i>		
PhD	5	7.8
M.Arts	3	4.7
Postgrad Diploma	2	3.1
M. Ed	1	1.6
Dip Grad Bilingual Teaching	1	1.6
M.Business Admin	1	1.6
M. Fine Arts	1	1.6
M.Sc	1	1.6
Missing	2	3.1
Total	64	100.0

Appendix D

Previous Studies

Studies with large populations of DHI students

Author(s)	Subjects	Method	Aim
MacLeod & Welsh (1982)	257 Withdrawals from NTID	Questionnaire	Measuring the benefit of NTID/RIT degree
Foster & Elliot (1987)	20 students transferring to NTID	In depth interviews	Reasons for transferring to NTID
Stinson, Scherer & Walter (1987)	233 students at NTID	Tests and questionnaires	Social satisfaction and persistence
Walter, Foster & Elliot (1987)	Students leaving NTID		Social isolation/dissatisfaction
Foster (1988)	15 first year students NTID	Open ended interviews	Academic and social integration
Scherer & Walter (1988)	117 Students withdrawing NTID	83 item exit interview	To learn why students withdraw from NTID
Foster & Brown (1988)	30 Hearing students at NTID	In-depth interviews	To study the integration of hearing and deaf students
Foster & De Caro (1991)	20 students living in a residential hall (33 Deaf -17 hearing)	In depth interviews, 12 participant observations	To learn about life on a mainstream floor
Long, Stinson & Braeges (1991)	95 hearing impaired adolescents-school for the deaf	28 item questionnaire	Self perceptions of communication ease and engagement
Stinson & Walter (1992)	NTID	7 item questionnaire	To study academic and social integration of deaf students
Lang, McKee & Connor (1993)	46 faculty members 120 teaching staff 334 deaf college students NTID	Interviews with 20 faculty staff 32 item Likert scale questionnaire – students	Perceptions of teaching characteristics as determined by staff/students
Dowaliby, Garrison & Dagal (1993)	1990: 193 freshmen 1991: 143 freshmen NTID	33 item and 40 item Student Integration Survey (SIS)	To develop SIS
Garrison, Long & Stinson (1994)	50 deaf students NTID	84 item questionnaire	Feelings about aspects of communication within mainstream classroom settings

Stinson & Walter (1997)	243 deaf students NTID		Tested model of factors affecting persistence
Kersting (1997)	10 students RIT	In depth open ended interviews	Social aspects of mainstreaming
Lang, Stinson, Kavanagh, Liu & Basile (1999)	100 deaf students NTID 16 instructors	Grasha – Riechmann Student Learning Style Scale (GRSLSS)	Learning styles of deaf students and teacher's teaching emphasis
Foster, Long & Snell (1999)	76 students (46 deaf-30 hearing) 17 instructors	Questionnaires – a. Academic engagement form b. Communication ease scale Interviews	How students and instructors experience mainstream college classes
Richardson, MacLeod-Gallinger, McKee & Long (2000)	149 deaf students 121 hearing students RIT	Adapted version of Approaches to Studying Inventory	Impact of deafness on approaches to studying
De Filippo (2004)	177 Deaf and hard of hearing students NTID	Survey/interview - 177 students Focus groups- 23 students	Quality of life for deaf students
Lang, Biser, Mousley, Orlando & Porter (2004)	73 Deaf students NTID (36 Baccalaureate – 37 sub-baccalaureate)	Questionnaire	Comparing two groups perceptions about tutoring
Marschark, Sapere, Convertino & Seewagen (2005)	23 interpreters 105 deaf students 22 hearing students NTID/RIT	12 multi choice questions based on videotaped lecture pre-post test	Effects of several variables on deaf students learning in integrated classrooms
Jambor & Elliot (2005)	78 students CSUN	Self administered survey	Self esteem and coping strategies
Marschark, Sarchet, & Sapere (2010)	89 students enrolled in mainstream programmes at RIT versus 128 students in separate programmes at NTID	Course Experience Questionnaire, the Revised Approaches to Studying Inventory, and the Classroom Participation Questionnaire	Comparing the two groups level of knowledge

Studies in mainstream colleges

Author(s)	Subjects	Method	Aim
Murphy & Newlon (1987)	170 Mainstreamed hearing impaired students at 8 colleges - US	UCLA loneliness scale	To provide a starting point in the investigation of loneliness
Franklin (1988)	246 deaf freshmen in 7 colleges -US	Questionnaire	To study attrition in mainstreamed colleges
Dannermark, Strom-Sjolund & Borg (1993)	26 hard of hearing students, mainstream university–Sweden	Questionnaire	Socio economic status, health, social support, well-being and educational experiences
English (1993)	60 deaf students in small colleges -US	48 item questionnaire	Effects of support service on integration and intent to stay
Menchell (1993)	8 students- various colleges - US	Interview	To study academic and social experiences
Carr (1994)	66 deaf students - NZ	Questionnaire	Study of needs problems and experiences in mainstream tertiary sector
Warick (1994)	14 hard of hearing students at 3 universities -CA	Interview Journal entries	Impact of hearing loss on academic and social components of university life
Crabb (1999)	Deaf students in intensive pre tertiary programme -NZ	Questionnaire	Needs of deaf students intent on tertiary education
Leigh (1999)	34 hard of hearing adults (AGBAD)	12 item open ended questionnaire	To study identity and socialization preferences
Sameshima (1999)	28 deaf students mainstream universities and polytechnics -NZ	Questionnaire Formal interviews	Experiences and perceptions in the mainstream
Spadbrow & Power (2004)	18 hard of hearing students Griffith University AU	Survey	Support needs and perceptions of access to information
Komesaroff (2005)	2 deaf pre service teachers –AU	Formal interviews	To study identity and motivation for teacher training
Smith (2005)	14 deaf students at 4 mainstream colleges - US	Semi structured interview Participant profile	Perceptions of academic and social success and satisfaction
Hyde, Punch, Power Hartley, Neale & Brennan (2009)	72 deaf/ HH past or current students – Griffith University	Postal survey	Document evolution of tertiary access and exploration of university experiences

Appendix E

United Nations Convention on the Rights of Persons with Disabilities

Article 24

1. States Parties recognize the right of persons with disabilities to education. With a view to realizing this right without discrimination and on the basis of equal opportunity, States Parties shall ensure an inclusive education system at all levels and life long learning directed to:
 - a. The full development of human potential and sense of dignity and self-worth, and the strengthening of respect for human rights, fundamental freedoms and human diversity;
 - b. The development by persons with disabilities of their personality, talents and creativity, as well as their mental and physical abilities, to their fullest potential;
 - c. Enabling persons with disabilities to participate effectively in a free society.
2. In realizing this right, States Parties shall ensure that:
 - a. Persons with disabilities are not excluded from the general education system on the basis of disability, and that children with disabilities are not excluded from free and compulsory primary education, or from secondary education, on the basis of disability;
 - b. Persons with disabilities can access an inclusive, quality and free primary education and secondary education on an equal basis with others in the communities in which they live;
 - c. Reasonable accommodation of the individual's requirements is provided;
 - d. Persons with disabilities receive the support required, within the general education system, to facilitate their effective education;
 - e. Effective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion.
3. States Parties shall enable persons with disabilities to learn life and social development skills to facilitate their full and equal participation in education and as members of the community. To this end, States Parties shall take appropriate measures, including:
 - a. Facilitating the learning of Braille, alternative script, augmentative and alternative modes, means and formats of communication and orientation and mobility skills, and facilitating peer support and mentoring;
 - b. Facilitating the learning of sign language and the promotion of the linguistic identity of the deaf community;
 - c. Ensuring that the education of persons, and in particular children, who are blind, deaf or deafblind, is delivered in the most appropriate languages and modes and means of communication for the individual, and in environments which maximize academic and social development.

4. In order to help ensure the realization of this right, States Parties shall take appropriate measures to employ teachers, including teachers with disabilities, who are qualified in sign language and/or Braille, and to train professionals and staff who work at all levels of education. Such training shall incorporate disability awareness and use of appropriate augmentative and alternative modes, means and formats of communication, educational techniques and materials to support persons with disabilities.
5. States Parties shall ensure that persons with disabilities are able to access general tertiary education, vocational training, adult education and lifelong learning without discrimination and on an equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.