

**New Zealand Secondary School Teachers' Perspectives on  
Supporting Students who are Hard of Hearing or Deaf**

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## **Abstract**

***Aims:*** The study aimed to develop an understanding of New Zealand Secondary school teachers' perspectives on educating students who are DHH. The current study investigated teachers' perspectives on the benefits and challenges of mainstream school placement for students who are DHH. Additionally, this study aimed to identify teachers' professional educational needs to support their teaching of students who are DHH.

***Methods:*** A 44-item anonymous survey was developed using the Qualtrics online platform, based on instruments used in research by Coombe (2018), Lass et al. (1985), Roppolo (2016) and McKee and Smith (2003). The survey included questions requiring a range of closed or open text responses. The survey was fully completed by 134 New Zealand secondary school teachers. Thematic analysis was undertaken to analyse responses from open-ended text responses using an approach developed by Braun and Clarke (2006).

***Results:*** Teachers described the use of communication strategies, written material, to support and accommodate students who are DHH. The main benefits of mainstream placement for students who are DHH, outlined by teachers included; social integration, development of communication skills, access to standardised academic expectations and wide range of curriculum. The main challenges of students who are DHH and mainstream placement included; ineffective individualised support, communication barriers and social barriers.

***Conclusions:*** Teachers sampled demonstrated a general awareness of a range of teaching adaptations for students who are DHH, with a good awareness of strategies to support access to spoken communication. Teachers indicated an interest in information on specific learning support strategies for students who are deaf and students who are hard of hearing in their classrooms. Teachers also requested information on promoting inclusion of students who are hard of hearing or deaf in their classrooms. In person courses and consultation with relevant professionals such as Advisers on Deaf Children, were indicated to be teachers' most commonly preferred format of information to assist their teaching of students who are DHH.

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## List of Abbreviations

<b>ALD</b>	Assistive Listening Device
<b>AoDC</b>	Advisor on Deaf Children
<b>APD</b>	Auditory Processing Disorder
<b>BAHA</b>	Bone Anchored Hearing Aid
<b>CHL</b>	Conductive Hearing Loss
<b>CI</b>	Cochlear Implant
<b>dB HL</b>	Decibel Hearing Level
<b>DHH</b>	Deaf and hard of hearing.
<b>ENT</b>	Ear Nose and Throat Doctor
<b>HA</b>	Hearing aid
<b>IEP</b>	Individual Education Plan
<b>MoE</b>	Ministry of Education
<b>MoH</b>	Ministry of Health
<b>NIHL</b>	Noise Induced Hearing Loss
<b>NZ</b>	New Zealand
<b>NZSL</b>	New Zealand Sign Language
<b>ORS</b>	Ongoing Resourcing Scheme
<b>RM</b>	Remote Microphone
<b>RTD</b>	Resource Teacher of the Deaf
<b>SD</b>	Standard Deviation
<b>SLT</b>	Speech-language Therapist
<b>SNHL</b>	Sensorineural Hearing Loss
<b>TM</b>	Tympanic Membrane
<b>UK</b>	United Kingdom

<b>UDL</b>	Universal Design for Learning
<b>UNHSEIP</b>	Universal New-born Hearing Screening Early Intervention Programme
<b>US</b>	United States
<b>WHO</b>	World Health Organisation

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# 1 Background

## 1.1 Overview of hearing loss

Over five percent of global population, more than 1.5 billion people, are estimated to have a hearing loss (World Health Organization, 2021). Hearing loss results from damage or dysfunction to the auditory system. The site of lesion in the auditory system defines the type of hearing loss and determines intervention options. There are three types of hearing loss; sensorineural hearing loss, conductive hearing loss and mixed hearing loss. Sensorineural hearing loss (SNHL) is a result of damage or dysfunction to the inner ear hair cells and nerves, disrupting the function of the auditory pathway between the inner ear and the brain. SNHL are not usually medically or surgically treated, however amplification devices such as hearing aids and cochlear implants can offer management options. Conductive hearing loss are a result of dysfunctions in the outer ear or middle ear, obstructing normal delivery of sounds to the inner ear. Depending on the cause of CHL, surgical or medical treatments can be option. A combination of sensorineural and conductive contributors to a hearing loss, is known as a mixed hearing loss. The causes of hearing loss are not always determined and can be impacted by a range of genetic and environmental factors. Some causes of hearing loss include; congenital or acquired hearing loss, age-related hearing loss, chronic middle ear infections, noise-induced hearing loss (NIHL), and damage to the inner ear from ototoxic drugs (Lasak et al., 2014).

Degrees of hearing loss are typically described in New Zealand based on the Goodman (1965) classification, in which hearing is classified as normal, slight, mild, moderate, moderate-severe, severe or profound (Goodman, 1965). It is important to understand that the severity of hearing loss is not entirely representative or correlated with the listening and communication difficulties experienced. Furthermore, hearing difficulties, such as auditory processing disorder (APD), can exist with ‘normal’ degrees of hearing, and require support to address the needs of the individual (Moore, 2006; Northern & Downs, 2002).

Multiple factors can influence the impact of hearing loss on communication, academic and social development, such as; the degree, type, cause of hearing loss, age of onset and detection of hearing loss as well as the forms of interventions and hearing rehabilitations



used. Studies have shown earlier ages of detection and interventions, consistent use of hearing rehabilitation result in improved speech, language, academic and social development in comparison to unaided hearing losses, late-diagnosed and late intervened paediatric hearing losses (Mayne et al., 1998; Tharpe & Seewald, 2016; Yoshinaga-Itano et al., 1998). Hearing losses that are unmanaged or supported through communication strategies for example; the use of sign language to communicate, can significantly impact quality of life, and abilities to engage in communication, leading to withdrawal from difficult listening environments (Punch et al., 2019). A systematic review of literature indicated hearing loss to be associated with higher risks of loneliness and social isolation (Shukla et al., 2020).

Audiological rehabilitation options include; air conduction hearing aids, bone conduction hearing aids (BAHA) and cochlear implants (CIs), counselling and communication strategies. **Hearing aids** Air conduction hearing aids are a common intervention worn by students who are DHH. Hearing aid devices, generally contain the following components; microphones to pick up surrounding sounds, a sound amplification system to process sounds to the desired levels and a receiver (speaker) to deliver the sounds to the ear (Tharpe & Seewald, 2016).

**Bone conduction hearing aids (BAHA)** deliver sounds to the ear through bone conduction to the cochlea using a vibrating oscillator, instead of a receiver in the ear canal used in air conduction hearing aids. BAHAs can be used for the amplification of conductive, middle ear hearing losses and mixed hearing loss (Minovi & Dazert, 2014).

**Cochlear implants** Acoustic hearing aids alone provide individuals with severe to profound sensorineural hearing losses minimal speech recognition capabilities in the absence of visual cues (Wilson & Dorman, 2008a). Cochlear implants are considered as an option for the management of severe to profound sensorineural hearing losses. Candidacy for cochlear implants is assessed by a multidisciplinary team of professional involving; general physicians, ENTs, Speech and language therapists, audiologists, psychologist, other hearing support professionals, with consultation with the individual and their family (Entwisle et al., 2018). A cochlear implant is a prosthetic device that enables individuals with profound hearing losses to hear. The cochlear implant functions by bypassing damaged hair cells to directly electrically stimulate the auditory nerve via electrodes, which are activated in response to acoustic stimuli. The implant is able to stimulate the afferent nerve, providing afferent input to the central auditory system, restoring stimulation and hearing (Wilson &

Dorman, 2008a). Cochlear implants have been reported lead to improvements to general quality of life measures. A study by Damen et al. (2007) of 59 post lingually deaf participants found benefits of cochlear implant in multiple areas of quality of life assessments, which were maintained over six years after receiving CI. Improvements were reported in sound perception, speech production, mental health and emotions, social interactions and self-esteem (Damen et al., 2007). Furthermore, comparison of CI waitlisted individuals to individuals with hearing loss who received an implant, indicated fewer feelings of social isolation, feeling less of a burden upon their family and improved perceived quality of life in individuals with CI (Damen et al., 2007).

Awareness on the type, degree of hearing loss and hearing interventions of students who are DHH, can provide teachers a better understanding on supporting the student's needs.

### *School placements*

There are limited experimental studies evaluating the impact of different school placements on students who are DHH. Some studies have implied differences in the academic and social outcomes of students who are DHH related to mainstream school and segregated school placement. There are research difficulties to evaluating the impacts of school placement on academic and social development, including the wide range of factors that can affect outcomes and the low prevalence of hearing loss in the general population, which challenges recruitment of large sample sizes for the generalisability of results (Brice & Strauss, 2016). Although research results may be suggestive rather than definitive, studies can provide insights on the potential experiences of students who are DHH and provide directions for educational support.

Studies found the academic outcomes of students who are DHH attending general education classrooms to be better than students who are DHH in self-contained, specialized classrooms (Holt, 1994 ; Kluwin, 1993; Kluwin & Moores, 1985; Kluwin & Stinson, 1993). It is important to consider additional factors that may contribute to this finding, such as the severity of hearing loss, preferred mode of communication and learning needs of students. Students who are DHH in general classrooms in the studies may have less severe degrees of hearing loss, use spoken language as a preferred mode of communication, therefore may receive greater access to learning in general school settings (Antia et al., 2010). A literature review by Karchmer and Mitchell (2003), did not find a clear connection between school program characteristics and the achievement outcomes of students who are DHH. Karchmer

and Mitchell (2003) estimated school settings to contribute to 1% of variety in achievement outcomes, and that 20-25% of the variances in student outcomes existed before students entered schools settings. Demographic characteristics such as the degree of hearing loss and family resources were suggested to be key factors to academic achievement (Kluwin, 1993; Kluwin & Stinson, 1993). Separating the impact of school placement and student demographic characteristics, on educational achievement, is challenging to accurately determine. In addition to academic outcomes, studies evaluating social outcomes of students who are DHH in different school setting demonstrated variations in results. A study comparing mainstream students who are DHH to hearing peers, aged 11, 13, and 15, found students who are DHH to report more feelings of loneliness compared to hearing peers (Kent, 2003). However, studies have reported feelings of loneliness and adjustment issues, for both students who are DHH attending mainstream and separate specialized classes (Most, 2007). A study evaluated the perspectives of 54 children aged 5 – 12 years and their parents, from the UK and USA, found the combination of deaf children with deaf parents, attending a school for the deaf, and using sign language at home to be associated with highly positive perceptions of social success (Marschark et al., 2012). At the time of this research, no studies were found on the experiences and outcomes of students who are DHH in different secondary school settings in New Zealand. Hence, findings from different countries and school settings may not reflect NZ school system.

## ***1.2 New Zealand educational settings***

In 1880, the first school in New Zealand for the deaf opened in Sumner, Christchurch (Powell & Hyde, 2014). Since the opening of the first school for the deaf, educational services in New Zealand for hearing impaired and deaf students have evolved from specialised schools to mainstream school settings, reflecting international trends in deaf education (Powell & Hyde, 2014; Luckner & Stewart, 2003). A study on the educational placements of disabled students in New Zealand identified 9700 students with hearing loss, of which 95% were reported to attend mainstream schools whilst 5% attended deaf education centres (Statistics New Zealand, 2008; Powell & Hyde, 2014). Current data on secondary students with hearing loss was not found at the time of research. Further data need to be sampled to accurately describe demographic characteristics of the NZ population of secondary students with hearing loss.

The general shifts from segregated specialised schools to mainstream school placements of students who DHH are proposed to be impacted by a range of factors, including; significant shifts of earlier ages of hearing loss detection and intervention, through the Universal Newborn Hearing Screening programme and technological advancements in hearing aids, amplification devices and cochlear implants providing greater auditory accessibility (Marschark et al., 2011a; Padden & Ramsey, 2000; Marschark et al., 2007; Powell & Hyde, 2014; (Tsach & Most, 2016). The decision for a child to attend a mainstream school or a deaf education centre is influenced by the child's degree of hearing impairment, parental choices typically based on the child's communication, cultural or additional medical needs, societal attitudes and legislation (Luckner & Stewart, 2003; Powell & Hyde, 2014; Powell, 2011). The New Zealand Education Act (1989) and the New Zealand Human Rights Act (1993) protect the right of all children to free education at any state school in New Zealand until the age of 19 (NZ Education Act, 1989, Section 8).

A number of relevant Education and Social policies have been implemented by the New Zealand Government. In 1996, New Zealand's Ministry of Education published Special Education 2000, a set of policy guidelines for achieving an inclusive educational system (Brown, 1997; Powell & Hyde, 2014). The Ministry of Social Development released a framework of policies in 2001 that was revised in 2016, entitled the New Zealand Disability 2016-2026, Making a world of difference, Whakanui Oranga, to guide the government's development of an inclusive society (Ministry of Social Development, 2016). The strategy includes the objective of ensuring all children have equitable access to resources and states that no child can be denied access to their local mainstream school due to a disability (Ministry of Social Development, 2016). In 2008, New Zealand agreed to the rights in the United Nations Convention on the Rights of Persons with Disabilities, requiring New Zealand to implement inclusive and equal rights to people with disability, including the right to education (Ministry of Social Development, 2016).

The terms mainstreaming and inclusivity of students who DHH in schools settings, are often used interchangeably, and have varied interpretations. Interpretations of these concepts are influenced by social, economic, political and cultural settings. Mainstreaming can simply refer to placement or attendance of individuals in a mainstream, national or general school settings, whereas inclusive education can be associated with an approach the provision of

learning services. MacArthur (2009) defined inclusive education in a resource published by the Ministry of Education;

“Inclusive education means that barriers to each student’s learning are identified, and resources and support are in place to overcome any barriers. Inclusive values such as equity, participation, community, compassion, respect for diversity and entitlement to education are a vital foundation in inclusive schools.” (MacArthur, 2009)

The policies developed and co-signed by the New Zealand government, present the government’s commitment to providing an inclusive society and educational system. Effectively providing an inclusive educational system extends beyond equal access and requires the understanding and support of students' learning needs to achieve equitable outcomes (Powell & Hyde, 2014). Teachers and schools require population-specific knowledge, skills and resources to ensure each student reaches their full potential in an inclusive educational system. Evaluating teachers’ knowledge and perceptions of skills is critical to ensuring the educational system is equipped to provide quality education to all populations of students, including hearing impaired and deaf students.

### ***1.3 New Zealand support services***

In New Zealand, most students with hearing loss attend mainstream schools. As part of the policies developed, hearing impaired and deaf students are able to access resources and services such as resource teachers of the deaf (RTDs), advisors of the deaf (AoDC), teacher aide support, certain funds and access to assistive auditory devices such as hearing aids and remote microphone systems until 21 years of age (Powell & Hyde, 2014). Individual education plan (IEP) can be arranged to help meet specific learning needs students may have, such as different learning material or different methods of instructions.

A range of organisations, professionals and community support are available in New Zealand to help students who are DHH in their education and development. For example Resource teachers of the Deaf (RTDs). RTDs can work in a variety of settings with students who are DHH, such as individual support and support in classrooms. RTDs can adjust the curriculum to match the needs of students and collaborate with Deaf education Centres.

Ko Taku Reo is the national provider of educational services to students who are DHH, with two specialist schools, located in Christchurch and Auckland (Ko Taku Reo, 2021a). Ko Taku Reo provide children and young adults who are DHH and their families with resources and services to support developmental needs. Ko Taku Reo engage with the Deaf community and implement the use of New Zealand Sign Language (NZSL) and English throughout organisation, with reflections on the importance Te Reo Māori and Māori culture. Preschool and early intervention centre programmes are offered language development and foster connections between parents and families. Residential campuses for children from 11 years to 21 years are available at the school. Residential accommodations are available at the Christchurch campus for the four-day residential courses aimed to provide specialised support for children who are DHH and their families (Ko Taku Reo, 2021a).

Another support is Advisors on Deaf Children (AoDCs) who work with children from birth to year three, supporting and guiding the children and whanau. ASSISTS Specialist teachers help provide support from year 4 until the end of high school. If additional support is required, other channels can be resourced such as the Ongoing Resourcing Scheme (ORS), which can help provide funding for support from teacher aid. The ministry of health (MoH) assists in funding some of the supports, as well as being responsible for funding hearing aids and RM technology. Deaf Aotearoa is an organisations which provides resources and knowledge to support families with deaf or hard of hearing family members. Deaf Aotearoa often work with government agencies and businesses to find ways to support the deaf community in NZ.

Teachers' experiences with support services should be investigated to evaluate effectiveness of the services provided and identify areas for improvement.

### ***General classroom support***

A range of strategies have been suggested to support education of students who are DHH in school settings. The strategies and the extent of their applications is highly dependent on the needs and characteristics of the individual students, as well as practicalities in the school setting. Some approaches to managing hearing losses in the classroom will be briefly introduced. Research by Marschark et al. (2010) described general strategies shown to

support students who are DHH in understanding spoken communication, seeking clarification and maintaining a learning pace with peers. These general strategies involve; facing towards students to enable lipreading, providing students time needed to read and receive information presented on class screens or boards and chances for students to clarify understanding of content and class activities (Marschark, 2010 ; Marschark, 2016). Presenting concepts with visual reinforcements, graphics and diagrams was also suggested to enhance understanding and reiterate any missed verbal information (Knoors & Marschark, 2015; Marschark & Hauser, 2012).

Students with hearing loss or hearing disorders such as APD can use assistive listening devices (ALDs) to aid access to auditory information in school settings (Zanin & Rance, 2016). ADLs can deliver amplified communication or environmental sounds of interest, reducing effects of background noise and distance from speaker or sound source. ADLs can be used in connection with or without hearing aids or cochlear implants. Sound field amplification systems are an example of ALDs, involving the use of loudspeakers in classrooms or halls to transmit sounds from microphones used by the speaker or transmit audio from electronic devices to the room. Personal remote microphone systems (RM) are a ADL, commonly used in the classroom. RMs consist of portable microphone used to capture speech sounds from the speaker. The microphone is positioned close to the speaker, usually attached to the speaker's clothing, worn on a lanyard, handheld or positioned on a nearby surface or table in a group setting. Speech signals from the speaker are picked up by the nearby microphone and transmitted to a receiver worn by the listener as an ear piece or coupled to the listener's hearing aids or cochlear implants. By transmitting sounds from a close distance speaker, RMs can improve access to the teachers' voice or small group discussion and reduce the effects of poor classroom acoustics and class noise on audibility accessibility for students who are DHH (Zanin & Rance, 2016).

#### ***1.4 New Zealand Secondary school teachers' experiences and perspectives***

To date, there is a limited number of research on New Zealand Secondary school teachers' experiences and perspectives on educating of hard of hearing and deaf students. Coombe (2018) evaluated the knowledge of hearing loss and deafness of primary school teachers in New Zealand. The study surveyed 146 New Zealand primary school teachers' knowledge of the causes and treatments of hearing loss, strategies for educating hard of hearing children,

source of acquired knowledge and educational information requested by teachers about hearing loss and deafness (Coombe, 2018). The study found variable levels of knowledge among primary school teachers related to hearing loss causes, treatments and strategies for teaching hard of hearing and deaf students (Coombe, 2018). The teachers demonstrated greater awareness of the general scope of audiology and general amplification options for hearing losses. The study identified a lack of knowledge of the illnesses that can cause hearing loss and strategies for communicating to hard of hearing children. Primary school teachers reported an interest in learning specific strategies for educating hard of hearing and deaf students. The teachers' main resources of information to support the learning of a student with hearing loss and deafness were the parents of the student, directly from the student, and professionals that support DHH children at schools such as Resource Teachers of the Deaf and teacher aids. Coombe's research revealed a need to improve New Zealand primary school's knowledge of hearing loss and strategies for supporting the education of hard of hearing and deaf students. The survey developed by Coombe was based on the questionnaire used in research by Lass et al. (1985). Lass et al. (1985) assessed teachers' and special educators' knowledge of and exposure to hearing loss in the US. Lass et al.'s research in 1985, was completed when there was an increasing trend of hard of hearing students attending mainstream schools instead of receiving education from specialised teachers at schools for the deaf (Stinson et al., 2011). Although the research by Lass et al. (1985) was conducted 30 years before Coombe's (2018), both studies similarly found that teachers lacked knowledge of strategies to educate hearing-impaired students, highlighting the need to develop the skills of educators.

Roppolo (2016) examined the perceptions of south-east Mississippi teachers towards the inclusion of hard of hearing and deaf students in the general education classroom. The online survey instrument for this study was developed by the researcher Roppolo (2016) with the assistance of an experienced teacher of the Deaf. The anonymous survey aimed to elicit teachers' attitudes towards the inclusion of DHH students in general classrooms, teachers' perceptions of DHH students' abilities compared to non DHH students, perceived level of preparedness to teach DHH students, current and requested services to support educating DHH students. The survey by Roppolo (2016) was sent to south-east Mississippi teachers educating students from all grade levels, from preschools (3 year old children) to secondary schools (6th to 9th grade, equivalent to students aged 11 to 18 years). A total of 105 teachers in south-east Mississippi completed the survey, of which 60% were secondary school



teachers. Roppolo's (2016) findings showed that teachers had an overwhelmingly positive attitude on the inclusion of DHH in the general classrooms. The majority of teachers that participated in the study viewed the academic potential of DHH students to be on the same level as student without a hearing loss. The teachers perceived DHH students to be capable of achieving the same grades as their students that are not hard of hearing or deaf. The majority of teachers expressed that DHH students as likely pursue postsecondary education. Most of the teachers indicated feeling unprepared to adequately educate DHH students. 71% of the teachers responded to a question in the survey with a willingness to have a DHH in their class. Roppolo (2016) noted that 96.7% of teachers that did not respond with a desire to have a DHH student in their class, also felt unequipped to teach a DHH student. Roppolo (2016) suggested that a teachers' unwillingness to have a DHH student in their classroom could be linked to a feeling of unpreparedness to educate DHH students. Roppolo (2016) indicates that a preparedness to teach DHH students can contribute to a teachers' attitude towards to the inclusion of DHH student in the general classroom. As the majority of respondents indicated feeling unprepared to teach DHH students, without reporting the number of teachers that were willing to have a DHH student in their class although they felt unprepared to teach them, the strength of the link between these factors is uncertain. However the common feeling of unpreparedness to educate DHH students amount teachers, is a significant factor to direct improvement in the professional development of teachers.

McKee and Smith (2003) explored perspectives and experience of NZ mainstream teachers of deaf students. Participants were teachers of deaf students in mainstream schools identified to be receiving the Ongoing Resourcing Scheme (ORS), which provides funding, resources and specialist assistance to eligible students with significant educational needs (McKee & Smith, 2003). A total of 178 teachers completed the study's questionnaire, participants were most primary school teachers and a small number of secondary school teachers. Teachers perceived the main benefits of general school placement for deaf students in their class to be; social integration with hearing peers, exposure to regular academic standards, development of communication skills and skills for integrating into a 'mostly hearing world'. Teachers perceived communication barriers, teachers' lack of knowledge and limited time to meet students specific needs, noisy and visually distracting classrooms to be some of the main challenges of mainstream school placement for students who are deaf. McKee and Smith (2003) found most teachers to be satisfied with the advice and practical support they received for educating deaf students in their classroom. Teacher aides were notably mentioned by

teachers to support deaf students' access to spoken classroom instructions (McKee & Smith, 2003). Teachers of deaf students receiving the Ongoing Resourcing Scheme (ORS), which provides funding, resources and specialist assistance to eligible students with significant educational needs, were the target participants in the study by McKee and Smith (2003), hence the level of overall level satisfaction reported by teachers, may not be reflective of all mainstream teachers and teachers of students who are DHH with varying of educational needs. The general finding of beneficial experiences from the assistance received to teach ORS funded students indicates the value of specialist support. Teachers noted a need for greater scheduled formal collaboration with specialist staff and more development of teachers' overall skills in supporting the learning needs of students. The perspectives of teachers of students who are deaf contributes an understanding of awareness students who are DHH, will be interesting to compare with the findings of this study.

As of currently, the perceptions of Secondary teachers in New Zealand towards the inclusion of DHH students has not be researched. To evaluate this area of research in the New Zealand context, the survey instrument for this study will contain questions adapted from the from the perceptions section in the survey developed by Coombe (2018), Lass et al. (1985), Roppolo (2016) and (McKee & Smith, 2003).

### ***1.5 Aims and Research Questions***

This study aims to develop an understanding of New Zealand Secondary School teachers' experiences and perspectives on educating students who are deaf or hard of hearing. The following four research questions further define the aims of this study;

1. What are teachers' perceptions related to the strengths and challenges of students who are DHH?
2. What are teachers' perspectives on the benefits and challenges of mainstream school placement for students who are DHH?
3. What are teachers' knowledge, perceived level of skills and experiences in educating students who are DHH?
4. What professional development opportunities and information do teachers want to support their education of students who are DHH?



## **2 Methods**

The methods used in this study will be discussed in this chapter. To develop an understanding of New Zealand Secondary School teachers' perspectives of students who are DHH, the research will utilise both quantitative and qualitative data collected through an anonymous online survey.

### **2.1 Ethics**

This study was approved by the University of Canterbury Te Whare Wānanga o Waitaha Human Research Ethics Committee (Appendix A).

### **2.2 Participants**

The participants in this study were practising teachers of year 9 to year 13 students (equivalent to students aged 12 to 18 years old) attending a secondary school in New Zealand. Teachers from all types of schools offering secondary education were eligible to participate in this study. Secondary schools in New Zealand can be categorised as state, state-integrated schools private schools. The types of Secondary schools in NZ include; Secondary (for year 9 to 13 students), Composite (years 1-13), Restricted composite (e.g. years 11-13, years 7-10).

Participants were recruited via publicly available email addresses of New Zealand Secondary Schools administrators and posts to relevant online social media forums (view Appendix C for survey recruitment adverts). The survey was available online using the Qualtrics survey platform. This enabled participants to complete the survey anonymously. The first page of the online survey included information about the study and participant consent. Upon completing the survey, participants were offered the incentive of entering a draw for one of six \$NZD50 supermarket or MTA gift vouchers. A Qualtrics link separate from the survey completed by participants was used to record email addresses of participants wanting to enter the inducement draw and to request a summary of the study results.

A priori analysis was completed using G\*Power to obtain an estimated sample size of 134 participants for the online survey. The calculation was conducted using a correlation point biserial model statistical test, two-tailed t-test, effect size of 0.3, alpha level of 0.05 and a statistical power of 0.95.

A total of 171 participant responses were recorded in Qualtrics, the online survey platform, over an eleven-week period. Survey responses from 134 participants were fully completed and analysed. 37 responses were incomplete or partially completed and therefore excluded from the data analysis.

### **2.3 Survey Instrument**

The survey was developed based on instruments used in research by Coombe (2018), Lass et al. (1985), Roppolo (2016) and (McKee & Smith, 2003). These researchers used surveys to evaluate topics relevant to students who are DHH and their educators. Questions were derived and adapted from these published instruments to address this study's aim of evaluating Secondary school teachers' perspectives of students who are DHH.

A pilot survey was reviewed by four participants working as teachers or in the secondary education sector. The main modifications to instrument in response to the feedback from pilot participants included the inclusion or revision of: an image to represent a teacher wearing a remote microphone, options to select subjects, "Unsure/I don't know" option for questions on the estimated number of students who are DHH, and the addition of a description before a series of questions, for example; "*The following section aims to understand your perspectives on teaching hard of hearing and deaf students*".

The survey developed for this study contained 44 questions across the focus areas of participants of demographics, experiences teaching students who are DHH, perspectives on students who are DHH, sources of information related to hearing loss and resources needed to support teaching students who are DHH. The survey instrument can be viewed in Appendix B. The following questions illustrate each section in the research survey;

- *How many of the students you currently teach are hard of hearing or deaf?*. Multiple choice, seven options were provided, including an "I don't know" option.
- *How many of the hard of hearing or deaf students in your classroom(s) wear hearing aids to hear speech?* Multiple choice, seven options were provided, see Table 2.

- *What hearing devices and accessories have you had experience with and used to modify your teaching for hard of hearing or deaf students? (Tick if any apply).* A list of device options was provided, with an “other” text response option to provide participants the opportunity to respond with devices not listed by researcher. See Table 7.
- *What do you see as the main benefits for a hard of hearing or deaf student being in a mainstream class?* Text response.
- *What do you see as the disadvantages or difficulties for a hard of hearing or deaf student being in a mainstream class?* Text response .
- *Where have you gained your knowledge on supporting hard of hearing or deaf students in your classroom? (Tick all that apply).* Multiple choice, 12 options, see Table 8.

#### **2.4 Data analysis**

For the purpose of data analysis, the survey questions were divided into four categories to address the research questions. These categories included demographics, perspectives of teachers towards who are DHH, experiences educating students who are DHH, current and requested sources of information to support students who are DHH.

The format of responses to questions in the survey included multiple-choice, five-point Likert-type scale, text responses to short answer and open ended questions. Where relevant, questions with multi-choice responses included an “other” text response option to provide participants the space to enter answers the researcher may have not considered. Some survey questions allowed participants to indicate more than one answer, therefore in some instances the number of responses exceeds the total number of participants.

Data analysis was completed using Qualtrics and Excel 2021, version 16.56. Due to the non-normal distribution of results from some survey questions (e.g., Likert-type questions), non-parametric statistical analysis was completed to obtain the median and range measures. Text response data was analysed thematically.

Thematic analysis is a method of identifying common themes in qualitative data to answer research questions. Thematic analysis was undertaken using an approach developed by Braun

and Clarke (2006) who outlined six phases for the process of analysing qualitative data thematically. Initially, the researcher becomes familiarised with the content of the dataset through actively reading the survey responses and notetaking. The second phase involves systematically identifying labels or ‘codes’ for the ideas and concepts in the dataset. Qualtrics text analysis and Microsoft Word 2021, version 16.56 were used to record the identified codes with the corresponding extracts from survey responses while the dataset was examined. In the third phase, codes with the relevant extracted data sharing common concepts were grouped together to form potential broader themes. During the fourth phase, the themes were reviewed and restructured to ensure the themes reflected the dataset and addressed the research questions. The fifth phase consists of forming a refined definition of each theme. The sixth and final phase is production of an analytic report to narrate the findings from the data. These phases provide a conceptual guideline for the analytic process, rather than providing strictly linear sequential procedural steps (Braun & Clarke, 2006). The researcher undertook the process of analysing the textual data thematically, with some overlap and re-examining of the phases.

### **3 Results**

#### ***3.1 Teacher and school demographics***

The majority of participants identified as female, 82% ( $n = 110$ ), 17% as male ( $n = 23$ ) and one participated preferred not to state their gender. The age range of the survey participants varied across different age groups. Twelve percent ( $n = 16$ ) of participants were aged between 20 to 29 years old, 27% ( $n = 36$ ) were 30 to 39 years old, 24% ( $n = 32$ ) were 40 to 59 years old and equally 24% ( $n = 32$ ) were 50 to 59 years old, 13% ( $n = 18$ ) were 60 to 69 years old and no participants were 70 years old or older.

Participants were asked to describe the type of school in which they teach Secondary students. Participants were able to select all categories that applied to their current school, hence the number of responses exceeds the total number of participants. The percentage for each answer option was calculated using the total number of participants. Most of the participants (81%,  $n = 109$ ) were teaching at a Secondary school (for years 9-13 students). Nine percent ( $n = 12$ ) of teachers taught at a Composite school (years 1-13 students). 10% ( $n = 13$ ) of participants were working at Restricted Composite school (e.g., years 7-10, years 11-13, years 7-13). One participant was teaching at a Te kura kaupapa Māori. Four percent ( $n =$

5) of participants taught at a private school. Seven percent ( $n = 9$ ) of teachers were teaching at a Designated character school. The school categories; Specialist school and Regional health school were selected by a total of one participant. One participant included a description of a Catholic, state integrated school in the ‘Other’ text response option.

The demographic area of the participants’ school is summarised in Table 1 below.

**Table 1.** *Functional urban area classification of participants’ school*

<b>Demographic area of school</b>	<b><i>n</i></b>	<b>%</b>
Metropolitan area (more than 100,000 residents)	67	50%
Large regional centre (30,000 - 99,999 residents)	31	23%
Medium regional centre (10,000- 29,999 residents)	14	11%
Small regional centre (5,000 - 9,999 residents)	11	8%
Area outside functional urban area (less than 5,000 residents)	11	8%

There was a mean of 13.96 years of experience in teaching secondary students among participants (range of 1 to 42 years,  $SD = 9.76$ ). Most participants (81%,  $n = 109$ ) reported holding a qualification in addition to their teaching qualification, such as a bachelor’s degree, diploma, master’s degree, a Doctor of Philosophy. Participants taught students across an even spread of year groups. For the following year groups; year 9, year 10, year 11, year 12, year 13 the corresponding total responses were;  $n = 99$  (74%),  $n = 103$  (77%),  $n = 103$  (77%),  $n = 101$  (75%),  $n = 103$  (77%). The subjects taught by participants included the following, in descending order of counts in the data; English ( $n = 36$ , 27%), Science ( $n = 27$ , 20%), Maths ( $n = 24$ , 18%), Physics ( $n = 12$ , 9%), Biology ( $n = 12$ , 9%), Chemistry ( $n = 12$ , 9%), Digital Technologies ( $n = 7$ , 5%), Physical Education ( $n = 6$ , 5%), Drama ( $n = 4$ , 3%), Te Reo Māori ( $n = 4$ , 3%), Music ( $n = 3$ , 2%), Visual Arts ( $n = 3$ , 2%), Business Studies ( $n = 1$ ), Economics ( $n = 1$ ). The mean number of classes currently taught by participants was 4.62 ( $SD = 1.90$ ).

Ninety-two percent ( $n = 123$ ) of participants reported that they are not hard of hearing or deaf. Eight percent of participants ( $n = 11$ ) were hard of hearing or deaf. The majority of participants (87%,  $n = 116$ ) personally knew someone who is hard of hearing or deaf.

### **3.2 Experiences educating students who are DHH**



One quarter (24%,  $n = 32$ ) of participants reported that none of their current students are hard of hearing or deaf. Seventy-one percent ( $n = 95$ ) of participants indicated that they had at least one student who is DHH in any of their class. Table 2 on the following page presents a summary of the number are students who are hard of hearing or deaf in participant classrooms.

**Table 2.** *Number of students who are hard of hearing or deaf and those with amplification in participant classrooms*

<b>No. students in class</b> <i>Number (percentage)</i>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5 or more</b>	<b>Don't know</b>	<b>Participants</b>
Hard of hearing or deaf	32 (24%)	40 (30%)	30 (22%)	13 (10%)	6 (5%)	6 (5%)	7 (5%)	134 (100%)
Hard of hearing or deaf wearing hearing aids	41 (40%)	33 (32%)	12 (12%)	3 (3%)	0 (0%)	3 (3%)	10 (10%)	102 (76%)
Deaf wearing cochlear implants	55 (54%)	26 (26%)	3 (3%)	3 (3%)	0 (0%)	0 (0%)	15 (15%)	102 (76%)

One participant stated that there were no students who were hard of hearing or deaf students at their school. Seventy six (57%) participants did not know how many students who are DHH attended their school. For participants who reported their school as having students who were DHH, the number of students at each school ranged from 0 to 48 ( $M = 9.2$ ,  $SD = 8.33$ ).

Twelve percent of participants did not know the approximate number of students who are DHH they have taught during their teaching career. Two (2%) participants have not taught a student who is DHH. The mean number of students who are DHH participant have taught over their teaching career was 9.36 (with a range of 0 to 99 students,  $SD = 14.36$ ). Almost half of participants (47%,  $n = 63$ ) have taught between one to five students who are DHH during their teaching career.

The hearing devices and accessories participants have experienced through teaching students who are hard of hearing or deaf are shown in Table 3. As expected, there is a close to an equivalent number of participants noting experience with hearing aids and remote microphone systems. Remote microphone systems are commonly used to deliver amplified speech of the teacher directly to the student's hearing aid. Participants rated their own level of knowledge with hearing devices and accessories in teaching students who are DHH (as showed in Table 4). Around half of participants indicated having a low level of knowledge with hearing aids (47%,  $n = 63$ ) and cochlear implants (49%,  $n = 65$ ). Over half of participants (64%,  $n = 86$ ), reported having no knowledge of Bone Anchored Hearing Aids (BAHAs).

**Table 3.** *Hearing devices and accessories participants have had experience with in the classroom.*

<i>What hearing devices and accessories have you had experience with and used to modify your teaching for students who are hard of hearing or deaf?</i>	<i>Number (percentage)</i>
Hearing Aids	70 (66%)
Cochlear Implants	46 (43%)
Bone Anchored Hearing Aids (BAHA)	13 (12%)
Remote Microphones (or FM systems)	82 (77%)
Other	6 (6%)

*Note.* Participants could select multiple responses. ‘Other’ responses of amplification devices included a sound-field amplification system.

**Table 4.** *Participants’ self-rated level of knowledge with hearing devices and accessories.*

**Question:** *How would you rate your level of knowledge with these hearing aid devices and accessories to modify your teaching for students who are hard of hearing or deaf?*

<b>Level of knowledge</b>	<b><i>None</i></b>	<b><i>Low</i></b>	<b><i>Moderate</i></b>	<b><i>High</i></b>
<i>Number (percentage)</i>	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
Hearing Aids	26 (19%)	63 (47%)	36 (27%)	9 (7%)
Cochlear Implants	41 (31%)	65 (49%)	24 (18%)	4 (3%)
Bone Anchored Hearing Aids	86 (64%)	39 (29%)	7 (5%)	2 (2%)
Remote Microphones	28 (21%)	53 (40%)	48 (36%)	5 (4%)

### **3.3 Perspectives on students who are DHH and education in mainstream placement**

Results from Likert scale questions were used to address the research aims of developing an understanding of teachers’ general perspectives on mainstream placement, students who are DHH in additions to teachers’ perceived preparedness to teach and accommodate students who are DHH. Table 5. displays responses to a statement on mainstream placement. The majority of responses (89%,  $n = 119$ ) expressed that ‘all’ or ‘most’ students who are DHH should be educated in mainstream classroom (Table 5.). It is important to note limitations of understanding the context of teachers’ perspectives due to the closed ended nature of Likert scale questions. Although surveys were completed anonymously, there is a potential social desirability bias.

**Table 5.** *Participant Perspectives’ on the placement of students who are Deaf or Hard of Hearing in Mainstream Education*

<i>Response to survey question: Number (percentage)</i>	<i>All</i>	<i>Most</i>	<i>Some</i>	<i>None</i>
Regarding students who are hard of hearing or deaf, when asked whether all, most, some or none of the students should be educated in mainstream classrooms, participants’ responses were as follows:	59 (44%)	60 (45%)	14 (10%)	1 (1%)

All participants responded indicated they ‘*strongly agree*’ or ‘*agree*’ with a statement on students who are DHH having the same academic grade capabilities as hearing peers (see Table 6.). Participants strongly agreed with students’ who are DHH capabilities to pursue tertiary education (Table 6.). Responses suggested teachers viewed students who are DHH as capable academic achievers.

**Table 6.** *Participant Perspectives’ regarding students who are Deaf or Hard of Hearing*

<i>When asked to indicate whether they strongly agree, agree, disagree, or strongly disagree to these statements, participants’ responses were as follows: Number (percentage)</i>	<i>Strongly Agree (5)</i>	<i>Agree (4)</i>	<i>Neither Agree nor Disagree (3)</i>	<i>Disagree (2)</i>	<i>Strongly Disagree (1)</i>	<i>Mean</i>	<i>Standard deviation</i>
Students who are deaf or hard of hearing could most likely go to university if they choose.	112 (82%)	20 (14.9%)	1 (0.7%)	0 (0%)	1 (0.7%)	4.81	0.51
Students who are deaf or hard of hearing can achieve grades similar to their peers that are not deaf or hard or hearing.	112 (84%)	22 (16%)	0 (0%)	0 (0%)	0 (0%)	4.84	0.37

Participants responded to Likert scale questions related to their perceived preparation to teach students who are DHH and effectiveness of services at their school for students who are DHH. A five-point Likert-type scale was used where 1 = strongly disagree and 5 = strongly agree (range = 1 to 4). Most participants ‘agree’ to understanding the implication hearing loss has on education and feeling to teach students who are DHH, with a response means and

standard deviation of ( $M = 3.97, SD = 0.85$ ) and ( $M = 3.91, SD = 0.96$ ), respectively. Slightly less responses were skewed towards ‘agreement’ to perception of any students who is DHH receiving adequate services to meet their needs and ensure their progress in the general education curriculum at the participants’ schools ( $M = 3.72, SD = 0.97$ ) (Table 7.).

**Table 7.** Participant perspectives’ on teaching students who are Deaf or Hard of Hearing

When asked to indicate whether they strongly agree, agree, disagree, or strongly disagree to these statements, participants’ responses were as follows: <i>Number (percentage)</i>	<i>Strongly Agree</i> (5)	<i>Agree</i> (4)	<i>Neither Agree nor Disagree</i> (3)	<i>Disagree</i> (2)	<i>Strongly Disagree</i> (1)	<i>Mean</i>	<i>Standard deviation</i>
I understand the implications that hearing loss has on education.	36 (27%)	68 (51%)	20 (15%)	10 (8%)	0 (0%)	3.97	0.85
I feel prepared to teach students who are deaf or hard of hearing.	41 (31%)	54 (40%)	26 (19%)	12 (9%)	1 (0.1%)	3.91	0.96
Any deaf and hard of hearing students attending my school can receive adequate services to meet their needs and ensure their progress in the general education curriculum.	30 (22%)	55 (41%)	30 (22%)	19 (14%)	0 (0%)	3.72	0.97

Most participants indicated they would be comfortable working with a sign language interpreter or teacher of the deaf or hard of hearing, in the classroom. Most participants (96%,  $n = 129$ ) stated that they would be willing to wear a remote microphone device to promote listening for a students who are hard of hearing or deaf student. Three percent of participants ( $n = 4$ ) indicated that they might be willing wear a RM. Almost all participants (99%,  $n = 133$ ) reported being willing to provide preferential seating for students who are hard of hearing or deaf. Only one participant responded that might be willing to provide such seating.

### 3.4 Knowledge relating to hearing loss and current sources of information

Most participants (76%,  $n = 102$ ) have not attended a course that included information about hearing loss, deafness or hearing disorders, whereas around of a quarter of participants indicated that they have (24%,  $n = 32$ ). Thirteen percent ( $n = 4$ ) of the participants that

attended a course related to hearing loss stated that they could not recall the details of course, some describe the course to have occurred two decades ago. Most responses cited courses during tertiary education and through professional development at school. Four participants described day courses and teaching support from Ko Taku Reo.

Participants commonly described courses from tertiary education educational providers with information on hearing loss and supporting students who are DHH. One response referenced a paper on inclusive education at teachers college, other responses cited additional or specialised degrees including; Deaf studies at Victoria University, Bachelor of Arts, Postgraduate Diplomas in Education, and Masters Degrees.

Professional development seminars at school were commonly reported by participants, most responses described one day courses and some cited dedicated hour sessions. Educational seminars on supporting students who are DHH and the impacts of hearing loss, were reported to be presented by Resource teachers of the Deaf (RTDs) ( $n = 4$ ), Special educational needs coordinators (SENCO) ( $n = 2$ ) and audiologist ( $n = 1$ ).

Participants also reported courses on cochlear implants, audio equipment, Specific Learning Disorders, NZSL and Makaton language programme. Other organisers of courses included; Ministry of education, Deaf society, Brain Bee neuroscience competition and New Zealand Association of Language Teachers conference.

Almost half of the participants (47%,  $n = 63$ ) do not know how to use NZSL. Similarly, almost half (49% of participants,  $n = 64$ ) know 'a few basic signs'. 5% ( $n = 6$ ) of participants could sign 'moderately well', whilst one participants was 'fluent' in NZSL.

Table 8 below summarises the findings to answering the research question aimed at describing teachers' current sources of knowledge on supporting students who are deaf or hard of hearing. Table 8 presents the responses in descending order of participant counts.

Responses indicated a wide range of sources for knowledge on supporting students who are deaf or hard of hearing. Participants' most common sources of information on supporting students who are DHH in their classroom were '*students who are hard of hearing or deaf*' and '*parents/caregivers of students who are hard of hearing or deaf*' and '*self-taught (Internet, readings etc.)*' (Table 8.)

**Table 8.** *Participant sources of knowledge on supporting students who are deaf or hard of hearing.*

<i>Where have you gained your knowledge on supporting students who are deaf or hard of hearing in your classroom?</i>	<i>n</i>	<i>%</i>
Students who are hard of hearing or deaf	74	57%
Parents/caregivers of students who are hard of hearing or deaf	51	40%
Self-taught (Internet, readings etc.)	44	34%
Teacher Colleagues	41	32%
Resource Teacher of the Deaf (RTD)	29	23%
Paraprofessionals (e.g. Teacher Aid, ASSIST, Educational Support Worker)	27	21%
Course I attended related to students who are hard of hearing or deaf	17	13%
Resource Teacher for Learning and Behaviour (RTLB)).	11	9%
Adviser on Deaf Children (AoDC)	9	7%
Audiologist	6	5%

*Note.* Participants could select any responses that applied to them. Participants could select multiple responses. Participants could also select none of the responses.

Participants were asked to rank the sources of knowledge they selected for the question presented in Table 8, to indicate where they gained the most knowledge. The first ranking indicates the source of knowledge participants learnt the most from. Participants gained the most knowledge on teaching students who are hard of hearing or deaf predominantly from Advisers on Deaf Children (AoDC) (ranked first by 50% of participants that indicated AoDCs were a source of information), secondly from students who are hard of hearing or deaf (ranked first by 40% of participants gaining knowledge from students who are DHH), and thirdly from courses participants attended related to students who hard of hearing or deaf students (ranked first by 40% of participants that indicated that relevant courses provided a source of information).

As part of addressing the fourth research question, participants were asked to identify educational topics to assist their teaching of students who are DHH. The predominate education and information requested by teachers were; *‘learning support strategies’* for *‘students with hearing aids’* and *‘students with implants’*, *‘strategies to communicate with students who are hard of hearing or deaf’* and *‘promoting inclusion of students who are hard of hearing or deaf’* (Table 9.).



**Table 9.** *Further education and information identified by participants to assist in their teaching practice.*

<i>If you have a student who is hard of hearing or deaf in your class, what education or information about hearing loss or hearing disorders would assist your teaching practice?</i>	<i>n</i>	<i>%</i>
Learning support strategies for students with hearing aids	108	84%
Strategies to communicate with students who are hard of hearing or deaf	103	80%
Learning support strategies for students with implants	95	74%
Promoting inclusion of students who are hard of hearing or deaf	94	73%
The impact of hearing loss on learning and development	84	65%
How to use assistive listening technology such as remote microphone systems	76	60%
Assessing the learning of students who are hard of hearing or deaf	76	60%
Identifying of students who are hard of hearing or deaf	66	51%

*Note.* Participants could select multiple responses. Participants could also select none of the responses

Participants ranked their preferred format of information to assist their teaching of students who are deaf or hard of hearing. Participants' most preferred format were the following (in order of highest to lowest preference); in person course, consultation with relevant professionals (e.g. Adviser on Deaf Children), consultation with parents/caregivers, online course, educational video, information sheet. Responses to the preferred format in the 'other' textbox included; consultation with students who are DHH.

### **3.5 Qualitative Data - Thematic analysis**

The following sections report the findings of the thematic analysis of text responses to short answer and open-ended questions in the survey. Thematic analysis was completed using an approach developed by Braun and Clarke (2006). This section will present the overarching and sub themes identified in the survey responses supported with illustrative quotes from participant data. Participants were given the opportunity to respond to open-ended questions aimed to address the research questions of developing an understanding of Secondary School teachers' perceptions of the strengths and challenged of students who are DHH and perspectives on mainstream education.

### ***3.6 Reported adaptations used to accommodate students who are DHH***

Participants were asked to describe any changes they made to their teaching practice to accommodate students who are deaf or hard of hearing. 131 (98%) participants commented a response to this question. Five overarching themes were identified; changes to teaching pedagogy, environment and accessibility, attitudes and relationships, communication with the student and involvement of relevant professionals.

#### *Teaching pedagogy*

Teachers described adaptations to their teaching practices to facilitate the learning of students who are deaf or hard of hearing.

A majority of participants reported the use of written materials. A total of 65 responses mentioned providing students who are DHH with written educational communication and resources. The majority of participants reported presenting written instructions to supplement and reiterate verbal instructions. Written task instructions and detailed lesson plans were typically reported to be presented to students in form of printed paper sheets, on class boards and uploaded to digital media. Notebooks and worksheets were commonly mentioned to aid the students' learning. The following comments are examples from participant responses; *“Trying to make sure that all of the instructions are very clearly written down... Proper, detailed, step by step instructions. This way, if someone misses out on something that I’ve said, they have the written instructions as support.”*; *“Ensuring all information is accessible in writing as well as orally.”*; *“Consistently writing instructions on the board and the structure of the lesson.”*

Sixteen responses mentioned the use of captions for audio-video materials. Most of the responses mentioned that they *“only”* or *“always”* presented captioned videos to the class. One teacher mentioned searching for transcripts for videos without captions available. Another participant mentioned using *“captions during Google meets”*.

Seventeen responses mentioned the use of technology and digital platforms to enhance and support the accessibility of educational material to students who are DHH. Teachers commonly reported uploading class materials and communications on cloud platforms such as notes, videos and additional class resources for students to access during and outside of lesson times. A few comments also mentioned the providing the availability of digital

material to staff and professionals supporting the students who are DHH. The following excerpts are examples from participant responses; *“Google classroom for early release of everything to support staff and teachers.”*; *“Use of digital classroom instruction ensures all students receive the same instruction simultaneously. Questions asked are also recorded for discussions. Record of pair, small group, or class discussions are summarised on the board and in online lessons.”*.

In addition to written and verbal communication, a few teachers reported providing demonstrations and examples of work to support teaching students who are DHH. The following comments highlight the use of this approach; *“Instructions are always given verbally, and written and sometimes also demonstrated if it is a practical so that students have multiple opportunities to receive the instructions.”*; *“Provide students with examples of what is expected at the end of a task.”*.

Twelve participants referred to the use of visual materials and visual cues to enhance the education of students who are DHH. Visual aids were commonly used to support verbal or written instructions and task explanations. Some mentions of *“visual”* instructions in the count of 12 participants could refer to written delivery of class materials, rather than specific reference to imagery materials. Examples of responses mentioning using visual teaching modalities include; *“Supporting oral instruction/explanations with written and visual reinforcement.”*; *“Use colour to highlight important information in written information; now-then-next displays so tasks and instructions are visually displayed.”*.

Many teachers reported turning to students who are DHH to understand and facilitate teaching adaptations that would support their learning. A few teachers mentioned varying forms of information delivery and allowing the student to direct their format of learning. The following excerpts summarise this idea conveyed in a total of 10 participant responses; *“Asking the student what helps them and then accommodating those requests.”*

*“In the intro letter at the beginning of the year, I ask students for information about what will help them learn/succeed, which usually elicits info about hearing loss, and needs such as needing to sit on a particular side of the room etc.”*

Eleven participants stated that accommodations for students who are DHH are part of their general approach to teaching, as it benefits the learning of students who are not DHH. This

approach to teaching aligns with the Universal Design for Learning framework. Teachers' also mentioned using adaptations in their teaching practice which can benefit student who are DHH in their class that they were unaware of. The following excerpts are examples from participants' comments; "I also keep general noise levels low so that students who I am not aware of, have the best chance of hearing me.";

"I make sure that all learning content is available on Google Classroom, in written form, as well as delivered orally. When video clips are played, I always put on subtitles. This is part of a UDL approach to teaching and learning, as it is not always clear who is hard of hearing or deaf in your classrooms, and that information is not always readily available to teachers, or given to the school (some ākongā [students] may feel whakamā [shy] about it)."

A few teachers mentioned using a more subtle or universal approach to support students who are DHH that preferred to not be distinguished from students who are not DHH. For example; *"Students resent being singled out so I try to be subtle. Facilitating lip reading, and providing written notes."*

Seven participants described providing students who are DHH the opportunity to breaks in class and the opportunity to work in a quiet space. As summarised by a participant, these were viewed as *"breaks for fatigue"*. Participants stated they allowed students who are DHH to *"have breaks if they need"*, the *"option of working in a breakout room"* or an *"outside classroom space for a quiet space for group work"*. One teachers added that they *"paid attention to not over stimulate their senses especially near the end of the day."*

A few teachers mentioned minimal or no specific changes to their teaching, some noted; *"limited knowledge of what to do, no technical support"*. Some teacher mentioned the preparation of an *"additional lesson plan"* and *"tailoring activities which aren't accessible"*. A few teachers mentioned providing students who are DHH *"more practice opportunities"*. Another participant mentioned their own hearing loss when commenting on the accommodations made for students who are DHH; *"I am also hard of hearing so I always give written and verbal instructions."*

#### Communication with the student

Most participants (56 total mentions) outlined the use of strategies to support speech communication to students who are hard of hearing or deaf. Participants most frequently mentioned; facing the student, remaining in one position, ensuring visibility for lipreading and reading body language, when speaking to provide students greater direct access to speech sounds. For example, many participants *“made an effort to always face [the student who is DHH] so they could lip read”*. This effort was expressed in multiple responses, such as the following comment; *“Standing at the front more often. If I need to do an exercise involving something like dictation then I will look directly at the student to ensure that I don't forget not to move around.”* Participants' stated; *“Standing in one place to speak”* and demonstrated being *“conscious of student/ teacher position in the classroom”*. Participants commonly referred to speaking more clearly, concisely and slightly slower. Such as; *“articulating clearly so lip reading more possible”*, *“try[ing] to speak in a loud and clear voice.”* and *“try[ing] to talk slower and pay attention to clear pronunciation”*. A few participants commented on ensuring *“one person [is] talking at a time”* and *“waiting for silence before talking (for lipreading student with hearing aid)”*. As with many of the adaptation techniques mentioned by participants, there was a clear tone of commitment to remember and take measures to support students in the responses. Restating and repeating class dialog was reported by 10 participants. Teachers mentioned repeating instructions, explanations and communication from peers, for example; *“Echoing student comments or questions from around the room do HoH kids can also hear them.”*

Twelve participants described the use of sign language. In most of the mentions of NZSL, teachers reported learning the basics of sign language such as self-introductions, student names and essential class instructions. One participant expressed learning NZSL through a professional development course. Another participant reported learning Makaton sign language. There were four reports of onsite NZSL interpreters supporting students who are deaf or hard of hearing. Participants also mentioned attempting to speak clearer and at a pace which assists the NZSL interpreter. A few teachers reported the use of pre-arranged signals with students who are DHH, to gain attention or check for understanding. For example one participant stated; *“I would also check in with these students to see if they needed me to repeat things (a prearranged hand signal was sometimes used).”*

Many participants organise the classroom using grouping arrangements of students. Seven participants commented on supporting students who are hard of hard hearing within in grouped settings. Support in group arrangements was commonly provided through restating instructions in closer proximity to students, checking on understanding and providing more individualised teaching. For example, participants reported; *“grouping so I could easily stand by those with hearing difficulties.”*, *“check[ing] on small groups to restate the information.”* and *“intentional movement to the group that might need instructions verbally again”*.

Participant responses commonly mentioned regular check-ins with students who are DHH. Teachers reported frequently checking on individual students to ensure understanding, clarify questions, and communicate instructions. The following excerpts summaries the approaches expressed in a total of 33 mentions; *“Tried to communicate with them individually or in small groups, as opposed to in a plenary environment.”*; *“Sitting down with students after instructions/ lessons to check they have all necessary info.”*.

A few participants commented on their relational dynamics and attitudes towards students who are DHH. One participant reported *“maintaining high expectations”*, another participant also reported *“celebrat[ing] their successes with hearing students”*. Another participant *“tried to build a strong rapport and relationship”* to build trust and facilitate communication with students who are DHH. Participants also commented on approaches to *“understand and empathize with their differences”*, *“insure they have ample opportunity to contribute”* and to *“be patient and not get angry when the student was frustrated, disengaged.”* One participant expressed awareness of responses from peers who are not DHH; *“very conscious of other students being kind and accepting of differences”*.

#### Environment and accessibility

Preferential seating arrangements were a commonly reported accommodation, mentioned in a total of 46 responses. Teachers reported providing seating positions in the classroom for students who are DHH that would support their hearing and learning. Factors commonly considered by participants in the seating arrangements include; seating near the front of the class for optimal hearing (27 mentions), seating with clearer sight of the teacher and whiteboards/class screens for better access to non-verbal communication, seating near peers for positive learning environments and allowing students who are DHH to choose their seating location. Examples from participant responses include the following ; *“Positioning in*

*the classroom when giving instructions so that hard of hearing students can hear” ; “inviting student to choose best location in the classroom for them”; “Classroom setting/placement so that students can be close to the teacher, or key peers to optimise hearing and/or lip reading”. One participant reported rearranging the seating layout of the whole classroom; “changed layout of the classroom so that students were all facing front while teacher giving instructions”.*

There were ten mentions of pairing students together to support students who are hard of hearing or deaf. Participants commonly mentioned pairing students who are hard of hearing or deaf with *“hearing students”* or *“a critical friend”* or *“with buddies who were responsible for making sure they understood what was to be done”*, essentially *“to ensure [students who are DHH] all get the instruction.”*

Classroom noise levels were mentioned by 13 participants. Teachers commonly noted the need to monitor and moderate classroom noise levels, as summarised by the following example; *“ensuring classroom environment is managed effectively to ensure everyone can hear properly”*. One teacher described physical adaptations to classroom environment to manage noise levels by using; *“carpets and cushioning to minimise echoes”*.

There were 41 mentions of the use of remote microphone (RM) systems. Some teachers specified the use of RM when given with the device. A few teachers mentioned a varying consistency of RM device use and instances of the teacher or the student forgetting to use the device. Some teachers reported ensuring that they asked the student for the RM device rather than waiting on the student to initiate the use of the device. A RM with a lanyard worn around the neck was a commonly reported style of RM device, a few responses specifically mentioned the use of the Phonak brand Roger microphones and Roger microphone pens. A few teachers mentioned the use of portable RMs and table microphones for peer discussions. One teacher stated that the device provided to them had stopped functioning.

There were some mentions of other assistive listening devices. A couple of teachers described the use of amplification devices and sound field systems. For example; teachers mentioned *“wearing a amplifier”* or *“personal amplification at times.”*, another teacher stated *“one school also had “speakers in all corners of lab”*. Two teachers mentioned the use of transcription devices. One teacher reported recoding their teaching using a transcript tool; *“I*

*recorded myself with the transcript*". Another teacher mentioned using *"assistive technology such as read to and speech to text"*. Four teachers commented promoting students who are DHH to use their personal hearing aid devices, as mentioned by the participants; *"Encouraging the student to use hearing aids"* and *"Encourage use of aids as needed"*.

Two participants mentioned a decision by the student to not use a hearing device or assistive listening device. A participant described a student who *"tried different hearing devices but chose not to use any"*. Another participant expressed that the *"[student] refuses to wear [their] FM system"*, this participant's comment further described their approach to support to this student; *"...so I just talk to [them] individually to avoid [them] falling behind and my door is always open for my hard of hearing students to come and see me for extra tutorials etc."*.

#### *Involvement of relevant professionals.*

Teachers mentioned the involvement of relevant professionals in the education of students who are DHH. Three participants reported collaborating with Resource Teachers of Hearing (RTHs). One teacher commented; *"As SENCO [Special Educational Needs Coordinator] I have appreciated recommendations for students by the Resource Teacher Hearing from Van Asch, normally specific to individual students"*. The support of the Van Asch Deaf Education Centre, now named Ko Taku Reo was reported by one other participant; *"I would also liaise with Van Asch to get their input and give my resources to them so they could work with me and the pupils."* Three responses reported the teaching assistance and support of teacher aids for students who are DHH. Four participants stated informing other teachers, staff or the learning support department on the challenges of students who are DHH as well as the strategies and resources to support the students. One teacher commented on attending IEP (Individual Education Plan) meetings. Three participants mentioned incorporating knowledge and skills gained from workshop participants attended and through professional development.

### ***3.7 Perceived benefits of mainstream education***

Teachers were asked to describe the benefits of students who are deaf or hard of hearing being in mainstream classrooms. One hundred and thirty participants described their perceived benefits of mainstream placement. The common themes found the responses are summarised in Table 10.



**Table 10.** *Perceived benefits of mainstream education for students who are deaf or hard of hearing*

<b>Perceived benefits</b>	<b>No. of mentions</b>
Social normalisation and preparation for the ‘real world’	71
Developing others’ cultural awareness/understanding of being DHH	34
Equal opportunity and right to attend local mainstream school	36
Standardised academic expectations and access to wider curriculum	20
Peer interactions/socialisation	61
Promotes Universal Design for Learning	22

*Note:* Responses can mention multiple themes

*Social normalisation and preparation for the ‘real world’*

Forty-nine responses considered mainstream placement to normalise hearing impairment, foster inclusion and help depict mainstream society. Additionally, twenty-two responses viewed the placement of students who are DHH in mainstream schools as beneficial preparation for the ‘real world’.

Participants commonly reported placement in mainstream education to provide students who are DHH a sense of “normalcy”, “belonging” as it “allows them to feel part of a mainstream learning environment and not feel segregated from their peers.” or “feel like they are being treated as though they are ‘different’ simply because of their disability.” Participants frequently outlined that “students learn best with their peers and shouldn’t be treated differently because of a disability. Normalising disability benefits everyone.”.

Mainstream placement was often viewed to result in “being hard of hearing or deaf [becoming]’ socially normalised” and form a “cross-section of society” in the classroom. A few responses perceived the inclusion of students who are DHH in mainstream school to benefit the integration and accessibility of people with hearing loss in the wider community. This perspective is summarised by the following two responses; “More exposure of Deaf or Hard of Hearing students in mainstream education will result in it being “normal” and therefore having better future opportunities for them”. As captured by another response; “The student’s disability becomes normalised and it becomes more likely that society will (hopefully continue to) improve in terms of accessibility for those with hearing needs.”

Many participants expressed that “*having diversity in the [mainstream] classroom prepares ākonga for the world beyond school.*”, including preparation for tertiary education and the workplace. Mainstream education settings were viewed to offer students who are DHH the opportunity to understand their needs, learn strategies to manage their challenges, develop communication and self-advocacy skills as they “*interact and learn alongside students with no hearing loss*” and “*learn coping strategies in a mostly hearing world*”. As reflected in the following response; “*Experience in the real world - the world is not set up to accommodate them, so they get an understanding of what is easy and hard for them, and how to compensate or ask for help.*”.

#### Peer interactions and socialisation

Placement in mainstream school settings was perceived to have social benefit for students who are DHH by sixty-one participants. Mainstream placement was reported to present students who are DHH the “*same socialisation opportunities*” and exposure to “*social interaction that mirrors the rest of society*”, prompting the “*development of necessary social skills*”. In addition to the development of social skills, participants mentioned development of communication skills, lipreading abilities, exposure to spoken language, positive peer relationships, conflict resolution skills, social awareness, learning from peers, and reduced social isolation. Mainstream settings were perceived by some participants to offer students greater prospects of broadening their social circles and finding peers or social groups with shared interests, as expressed in the following response;

“They're part of a larger community and get to be around a range of other students. The Deaf community is quite small and can be isolating in some ways (especially if you don't fit in to a small social group)”

#### Developing others' cultural awareness and understanding of being DHH

Thirty-four participants indicated that mainstream placement develops the awareness and understanding of hearing loss in peers of students who are DHH. Many participants reported that students who are DHH have the opportunity to share their experience of being DHH, raise awareness of the Deaf community and contribute “*a valuable perspective that others may not have considered*”. The inclusion of students who are DHH in the classroom was often reported to foster understanding and empathy in peers, as “*students learn how to be inclusive of all and considerate of the needs of others, raising awareness of the challenges*”

*students face and are strategies to allow equity to all learners*". The following response also highlights the potential positive impacts of mainstream placement; *"Young people demonstrate acceptance, kindness, flexibility when working with someone who is hard of hearing or deaf. Some will learn the deaf language, some will go on to work with deaf people"*. A few participants commented on the benefit of students developing effective communication with peers who are DHH and experiencing *"sign language in action"*. Experience with classmates who are DHH was thought to motivate students, teachers and staff to learn NZSL and encourage schools to offer teaching NZSL.

#### Standardised academic expectations and access to wider curriculum

Seventeen participants mentioned that attending a mainstream education can provide students who are DHH broader access to the curriculum. Particularly; access to a wider range of subjects, specialist subject teachers and educational opportunities. A few participants commented that mainstream education can provide access to standardised academic expectations, enabling students who are DHH to *"bench mark themselves against any other student."* and build confidence in students who are DHH for *"achieve[ing] at the same level as other students despite their hearing loss"*. Some participants saw the benefit in teaching focused on achieving national standards in mainstream schools, as summarised by the following statement; *"teaching in special units is sometimes substandard / viewed as less important / focused on basics rather than high achievement"*. Participants perceived students who are DHH to be as capable their peers, with the appropriate support, as one participants commented on their experience;

"As long as they have an appropriate hearing device and the teacher is aware of any learning barriers associated with the hearing device, my experience tells me that hearing impaired students are more the able to achieve the same as their peers."

#### Promotes Universal Design for Learning

Twenty-two participants noted that adaptations which support the education of students who are DHH can benefit the learning of a wide range of students and promote better teaching practices. The awareness and practice of communication strategies for teaching students who are DHH such as *"clearly speaking"* for lipreading or providing more supplementary written materials, was reported to clarify and improve the teaching delivery as a whole. A few respondents noted that teaching practices adapted for students with hearing loss can meet the learning of needs of other students, such as students *"with auditory processing disorder or*

*who learn better visually.*”. The reported implications of teaching approaches adapted to students who can be summarised by the following responses; *“the delivery immediately becomes more inclusive, which can capture other students with learning needs as well, e.g. written instructions as well as verbal helps dyslexic students etc.”*

“In line with Universal Design Principals, what works for students with particular learning needs can promote improved teaching and learning for all by promoting a 'person centred approach' and focusing on the learning needs of the individual.”

Inclusive teaching practises were also perceived to demonstrate empathy, understanding and acceptance in the classroom. Many participants expressed that *“having a teacher understand and cater to the needs develops open mindedness for others and teaches acceptance between students”*.

#### *Equal opportunity and right to attend local mainstream school*

Participants expressed that mainstream placement offers students the opportunity for equal education and their right to attend their local or selected school. Participants commonly stated that *“deaf and hard of hearing students are entitled to receive the same quality of teaching as every other student”* and are entitled to *“a better choice of educational opportunities, being able to attend the local school”*. Participants commonly noted that students who are DHH have the right to *“access to equal and equitable education”* as well as *“access the same learning opportunities and to be integrated with their peers”*. Many of the responses stating that students who are DHH are entitled to teaching adaptations and inclusion in general education, expressed that students who are DHH have the same cognitive, intellectual, and social capabilities as students without hearing difficulties, as *“being hard of hearing does not mean a cognitive impairment”*, for example;

“All students should be entitled to the same education regardless of what difficulties they face. The teaching needs to be adjusted to suit the student needs. Socially they are usually the same as their peers - there is more to school life than just the academic factors.”

Many respondents stated that teaching should be adapted and inclusive to all learners, including students who are deaf or hard of hearing, as summarised by the following response;

“All classes should be inclusive for all learners, and our young people should be made to feel welcome, cared for, and catered for in any classroom. If they have a preference to work in a quieter space, then that should be there as an option for them as well, but I fundamentally disagree with keeping students separate just because they have different learning habits.”

### ***3.8 Perceived strengths of students who are DHH***

Teachers were asked on their opinion of the strengths of students who are deaf or hard of hearing. The common themes identified in the 129 responses are listed in Table 11.

**Table 11.** *Perceived strengths of students who are deaf or hard of hearing*

<b>Perceived strengths</b>	<b>No. of mentions</b>
Adaptability and problem solving skills	22
Work ethic, ambition/desire to succeed	23
Attentive and focused	32
Perseverance and resilience	29
Empathy and relationships with others	16
Unique DHH cultural perspective and experience	13
Self-advocacy and independence	17
Communication skills	28
Visual learning modality	6
Reading skills	4
Equivalent to students who are not DHH	5
Individualised to student	10
Unsure	4

*Note:* Responses can mention multiple themes. Non-blank responses  $n = 129$

### Communication skills

A range of communication skills were noted as strengths of students who are DHH. Students who are DHH were perceived to be skilled in non-verbal communication such as lipreading and reading body language cues, sign language and active listening. These skills were often reported to “*bring to the classroom real world diversity in communication. Sharing listening strategies such as lip reading, gestures and sign are valuable contributions to the classroom.*”. Some participants perceived students who are DHH to have developed a strengthened ability to lipread and communicate in noisy environment, including “*being able to with other signers in settings with very high sound levels*”

### Attentive and focused

Participants most frequently mentioned attentiveness and focus as strengths of students of who are DHH. Participants generally described students who are DHH to be “*very attentive as not to miss anything*” and “*seem to be very conscientious about making sure they know what they are doing*”. Students who are DHH were perceived to “*pay more attention to written handouts*” and “*usually are focussed on understanding the instructions*”. Some

responses reported students who are DHH to be “*very perceptive*” and have “*excellent observation skills*”. A few participants added that students who are DHH can be attentive in class “*as they have to concentrate harder on hearing*” or “*focus much better than other students as they are used to using their eyes to help understand speech*”. Some comments stated that students who are DHH are less distracted and able to sustain their focus in classroom noise.

#### Perseverance and resilience

Twenty-nine responses described students who are DHH as resilient and perseverant. Participants stated that students who are DHH “*might develop a level of resilience sooner than their peers*”. Some of the participants reflected on the resiliency of students who are DHH based on their experience; “*in my experience they have been very resilient to work through any challenges without allowing the hearing to hold them back*”.

#### Adaptability and problem solving skills

Twenty-two participants highlighted adaptability and problem solving skills as strengths of students who are DHH. Participants generally described students who are DHH as “*adaptive to their environment*”, “*able to overcome challenges*” and have developed “*a range of coping strategies*”. Many of the participants added that students who are DHH have “*often developed their own ways of trying to maximise understanding of work content*” and expressed that “*teachers should always ask the student directly what helps them.*”

#### Work ethic and ambition/desire to succeed

Twenty-three responses commented on a strong work ethic and ambition to succeed in students who are DHH. Participants expressed that students who are DHH “*tend to be more organized*”, “*work harder to overcome their disability*”, and are “*determined to succeed*”.

#### Self-advocacy and independence

Some responses noted the self-advocacy skills and independence developed by students who are DHH. Responses mostly expressed that students who are DHH “*seem to be more aware of what is good for their learning in class (space, noise, etc)*”. Participants stated students who are DHH were “*generally willing to ask for assistance*”, “*tend to ask for clarification more*” than their peers and were “*learning to talk to adults about their hearing*”. Six responses stated that students who are DHH are “*generally better at self-managing*” and

*“develop independence”*. Many of the participants observed these attributes in students and a few participants commented on the confidence required to develop to self-advocacy, as shown in the following response; *“students I have taught were good at talking to me about what they needed, I can imagine not all hard of hearing students would have the confidence to do this”*.

#### *Empathy and relationships with others*

Sixteen participants described students who are DHH to typically have high level of empathy, patience, and tolerance. Some responses suggested that students who are DHH may develop empathetic traits and an understanding of others’ struggles, as a result of their own experiences and challenges with hearing impairment. Nine participants generally viewed students who are DHH to have a *“greater awareness of how people with disability are treated”*, demonstrate an *“acceptance of others with disabilities”* and a willingness to help others.

#### *Reading skills*

Four participants indicated that students who are DHH may have strengthened reading skills. Some participants stated that reading skills were improved through the use of audio captions developing speed reading skills and greater accessibility of online or written learning materials.

#### *Visual learning modality*

Six participants (5% of total participants) described students who are DHH to generally be visual learners. Responses described students to be skilled in interpreting diagrams and information visually. A few participants commented on the benefit of online education and digital devices to support the visual learning of students who are DHH .

#### *DHH cultural perspective and experience*

Responses to the question on the perceived strengths of students who are DHH, contained themes that overlapped with the perceived benefits of mainstream placement reported above in section 2.1. Responses resembled the theme of mainstream placement developing a cultural awareness and understanding of being DHH in peers reported in section 2.3. Participants expressed that students who are DHH can contribute *“another perspective in the class that adds to the learning of all”*. Participants noted an opportunity to gain a perspective



on experiences with hearing loss, use of NZSL, Deaf culture and community. A few participants described students who are DHH incorporating their perspectives into their classwork, for example, one participant described a student interpreting text with a “*unique perspective to understanding unfamiliar text, especially when an author refers to sound within a text*”. Responses also stated that classmates can practice inclusion, empathy and develop an “*understanding that we all have barriers to learning*”. As previously reported in section 2.1 (theme: mainstream placement promotes Universal Design for Learning); participants noted that accommodations for teaching students who are DHH “*encourage better practice in class*” and may “*help other styles of learning in the class*”.

#### *Equivalent to students who are not DHH*

Six participants stated that the strengths of students who are DHH are equivalent to students who are not DHH. Ten responses expressed that the strengths are dependent upon the student. Four participants indicated they were unsure of any strengths specific to students who are DHH.

### ***3.9 Perceived challenges of students who are DHH and difficulties of mainstream education***

Teachers described their opinion on the challenges of students who are deaf or hard of hearing (132 responses, from 99% of total participants). Another question in the survey asked teachers to describe their perceived difficulties or disadvantages of mainstreaming students who are deaf or hard of hearing (130 responses, from 97% of total participants). A significant amount of overlapping themes was found in the responses to these two questions. The response data collated from these two questions were combined in the final analysis and will be presented together (combined total of 262 responses). To assist in understanding the context of some responses, where relevant this report will reference the specific question the response was answering. The overarching themes identified were ineffective teaching and school support, communication barriers and social barriers.

#### ***Theme - Ineffective educational support***

##### *Lack of classroom accommodations and teacher awareness*

Participants described mainstream setting to “*cater mostly for the hearing*” with “*delivery of education tailored to hearing students*” as well as “*tasks and assessments designed for*

*hearing students*". Participants commonly outlined students who are DHH to be disadvantaged by limited support from teachers, *"teachers who do not adapt their teaching or curriculum for the students' needs"* and a *"lack of resources to provide equitable access to education"* in mainstream settings. Consequently, participants expressed that students who are DHH can be *"overlooked"*, *"lost in a classroom where their condition is not addressed, acknowledged or catered to"* and *"may feel overwhelmed being in a class where there is a limitation on the amount of support that can be provided by a mainstream teacher"*.

A majority of the participants commented on a lack of awareness, knowledge and training on supporting students who are DHH. Participants stated that a lack of education on teaching students who are DHH leaves teachers unprepared to address the learning needs of students with hearing difficulties, for example;

"Not many mainstream teachers have any training or help when it comes to teaching a hard of hearing or deaf student, so the student may be disadvantaged by a teacher who is essentially making it up as they go along and just trying to do their best - it might not be the best practice or most effective for that student."

The following excerpt also summarises the potential challenges for students who are DHH in mainstream education expressed by participants; *"There may be little understanding of how to support these students and they may not get the best education possible for them."* Many of the participants emphasised inadequate professional development and a lack of support as predominate barriers for effective inclusion of students who are DHH in mainstream schools, for example;

"Teachers in mainstream class (to my knowledge) get no PD [professional development] on students with these disadvantages. Being able to learn in this situations is incredible difficult and their education suffers - not because of lack of ability but because of lack of support / understanding of their needs / unable to gain as much from a mainstream classroom setting as their able of hearing classmates."

Many participants personally expressed feeling unprepared to adequately educate and support students who are DHH; *"right now I don't feel I have the tools to help someone well if they are deaf or hard of hearing"*. A few participants highlighted a lack of experience educating students who are DHH contributing to teachers having limited knowledge and skills to supporting students with hearing loss. A few participants outlined that mainstream teachers

might be unwilling or unmotivated to adapt their teaching or understand the learning needs of students who are DHH. Some participants noted that while teaching, it can be difficult to recall the needs of a student who is DHH and remember to apply accommodations into their teaching practice in a mainstream setting. Four responses noted teachers and students not remembering to consider the needs of students with hearing loss for example; *“easy for students and teachers to forget/not make the effort to be inclusive”*.

Peers' lack of understanding of hearing loss and awareness of the needs of students' who are DHH, was also frequently noted as a barrier to inclusion. Responses noted teachers' and students' misconceptions and a lack of awareness on the challenges of managing hearing loss, benefits and limitations of hearing devices and how to provide support. The following examples highlight some of the misunderstandings identified; *“Not all students or teachers understand the challenges faced by these students or the appropriate way to teach them.”*; *“Adults and students around them not understanding but just because they have a hearing device doesn't mean they can hear. The deafness still remains the device just helps process.”*.

A few participants reported that teachers are not readily informed of a student's hearing loss. Participants noted a *“lack of information on enrolment about past testing of hearing (transition from intermediate to secondary schools)”* and between secondary schools. Teachers being uninformed of students' needs was viewed to result in students who are DHH *“potentially missing out and falling behind their peers if the teacher is not aware of their disability / cannot provide differentiated learning for them”*. The following response reflects this theme;

“Teachers aren't always told what the specific issue is, the extent of the issue, or what we can do to help. We sometimes get very little information and it can be quite awkward for the student who doesn't feel ready to advocate for themselves”

### Lack of school support

A lack of support was frequently mentioned as a barrier for effective inclusion of students who are DHH in mainstream schools. Some participants further described a limited availability of *“specialist / trained teachers”*, *“specialist assistance”*, *“interpreters of deaf”*, and *“lack of specifically trained teacher aides”*. A few participants noted limited access to specialist staff and *“outside agency support”* in rural areas. Limited school resources and funding for specialist support were viewed as a barrier for adequately accommodating

students who are DHH by a few participants. Participants expressed a lack of classroom technological resources to support teaching adaptations and a lack of support and training on the use of assistive listening technology.

Participants' experiences with specialist support highlighted the benefit these services. For example, the following comment demonstrates the important role teacher aids and support services from Ko Taku Reo, have in facilitating in the education of students who are DHH in mainstream schools.

“I was lucky to have support from van ash [Ko Taku Reo Deaf education centre] and I also had a teacher aide assigned to my class twice a week so I did have quite a bit of support. But if that wasn't there it could be easy for them to not understand or hear and feel too embarrassed to say something and then get behind if the teacher was always monitoring or if they had a big class”

#### Extra teacher time and resources

Many participants commented on time and resource constraints in general school settings limiting the support provided to students who are DHH, as summarised by the following response;

“As a teacher the difficulty comes from having to make extra resources, etc. to support them and the student may be disadvantaged if the teacher is time poor and struggling to produce high quality resources that really benefit the child.”

In addition to limited educational resources, participants noted more time demands for lesson planning, re-explaining instructions and meeting with specialists. A few participants expressed inconveniences with using listening devices in the classroom, for example; *“having to wear special tech to support the student (microphone type device), can sometimes feel like a bit of a hassle when in a rush”*.

Multiple participants stated that mainstream settings may provide students who are DHH less individual time with teachers, for example; *“not getting extra one on one time they may need from a teacher to support their learning.”* While commenting on barriers to accommodating students who are DHH, most participants expressed an understanding of students' needs and the importance of adaptations, for example; *“It takes a lot more effort on their part to keep up*

*with any oral feedback, teaching/ instructions or conversations when compared to students without this disability. Hence they often require a bit more time and/ or guidance.”.*

Participants noted that accommodations for students who are DHH in mainstream schools can be limited by *“busy teachers who cannot make the adjustments needed in every lesson”*. A few participants expressed that *“having a variety of teachers in secondary settings also means there is a greater level of adjustment needed for the student as they enter different classrooms.”*.

A few participants commented on teachers being overwhelmed and overworked by responsibilities to accommodate a wide range of student needs, as illustrated in the following responses; *“Teachers are somehow supposed to find the time to learn to sign, learn Te Reo Māori, learn how to navigate neurotypical behaviours, etc. all whilst delivering a standard course to a mainstream class. Starts to feel very overwhelming.”*;

*“Many teachers are not trained nor experienced to deal with the wide range of learning difficulties students face. If a classroom has more and more severe and wide ranging needs the focus shifts from learning to coping. Many teachers burn out over this and leave the profession.”*

Large class sizes and low student to teacher ratios were often mentioned as a challenge to providing effective inclusive education. Participants mentioned that students who are DHH are disadvantage in larger class sizes, as *“they could be marginalised/left behind if struggling to keep up, overwhelmed in a busy environment”*.

### **Theme - Communication barriers**

Communication barriers were one of the most frequently outlined challenges for students who are DHH. Participants noted challenges for students who are DHH accessing verbal teaching information, spoken instructions, audio materials and class discussions. Participants noted the *“verbal nature of a large proportion of lessons”* and expressed that *“most teaching is still heavily reliant on large amounts of audio, so the student is disadvantaged, despite adjustments”*. Responses commonly detailed challenges for students who are DHH *“missing out on information”*, *“keeping up with classroom discussion where speakers are all over the place”* and *“not understanding instructions if the teacher relies on verbal discourse”*.

Participants highlighted difficulties for students without teaching adaptations or communication strategies accessible to their hearing needs. For example; teaching content without supplementary written or visual material, *“working with audio-visual material for which there are no sub-titles available”*, *“teachers not facing them when talking e.g. talking to the board”*. A few participants noted a lack of sign languages users and proficiently in sign language.

In addition to potentially missing information directed to the entire class, seven participants noted *“students with hearing issues miss out on a lot of ‘overheard knowledge’ ”*, through dialogue between peers and teachers that supports learning. Participants noted students who are DHH missing social dialogue and informal communication in the classroom and with peers in wider school settings, as illustrated by the following response; *“hearing impacts the ability to participate in social interactions with peers and jokes”*. Groupwork was commonly reported as a challenge for students who are DHH in terms of following conversations, participating in discussions and coping with background noise during group activities. For example, responses included challenges for students who are DHH *“participating fully in activities”* and *“working within a group and having to concentrate on more than one person talking”*.

### Class noise

Class noise was most commonly noted as a factor in difficulties of students accessing audible information, as summarised by the following excerpts; *“classes can be noisy and the students may miss out on some of the instructions/discussions occurring around them”* ; *“being able to hear clearly in a noisy situation is especially challenging even with hearing aids.”*.

Responses often noted the difficulty for students with hearing loss to learn in noisy environments and the challenge to *“keep up academically because of classroom noises”*. Student generated noise was the main source of classroom noise reported, including students working and engaging in group activities. Classroom noise was exacerbated by open learning environments and larger class sizes, such as *“noisy classrooms with between 28-32 students”*. Participants also stated that *“most junior classes have at least 25 students in it meaning the classroom environment is usually reasonably noisy, even if students are on-task.”*.

A few participants discussed the impact of classroom noise management on students who are DHH, as summarised by the following responses; *“Inadequate classroom management is an*

*issue as if a class is chaotic this can create a further barrier to achievement which has even greater consequences for hearing impaired or deaf students”; “If the teacher is unable to manage noise levels, then the hearing impaired student may be unfairly disadvantaged. It's important that the teacher has the skills to manage the class to benefit every student equally.”* Participants highlighted the need for effective classroom noise management; *“teachers need many strategies to confidently manage moving from silence to a good volume for collaborative learning.”* Other reported sources of class noise included; environmental sounds, computer noises and noises from surrounding classrooms.

Large open spaces and modern classrooms layouts were noted to be challenging listening and learning environments for students who are DHH. Many participants stated that classrooms were not set up with good acoustics. Some noted a *“lack of resources to make environmental adjustments in every space the student uses”*. There were a few mentions of difficulties for students who are DHH, if they are not provided or arranged classroom seating locations beneficial for their learning and access to auditory information. Some classroom configurations do not aid students to visualise the teacher and lip reading. Participants also noted that optimal seating was *“sometimes not available/possible”*.

#### *Other communication access issues:*

Covid-19 face mask use was noted to contribute to communication difficulties such as understanding speech sounds and visualising facial and lipreading, for students who are DHH by a small number of participants, for example; a *“difficulty seeing teacher's and classmate's lips (now impossible because of masks)”*. A few participants mentioned potential issues related to safety hazards. The main concern being; students who are DHH missing emergency alarms or emergency instructions. However, some participants added that plans can be prepared to manage safety risks and emergency situations with students who are DHH.

#### *Theme - Social issues*

Multiple social and personal factors were identified as challenges for establishing the inclusion of students who are DHH in mainstream schools. Concerns of peer perceptions and fear of peer judgment were indicated by twelve responses as a challenge for the inclusivity of students who are DHH. Responses noted the *“confidence needed sometimes to get past what other students might think”*. Six responses detailed students who are DHH unwilling to

disclose hearing loss to others, for example; *“often don’t want peers to know”*. Some responses detailed potential reasons for students preferring to not disclose their hearing loss, most indicated desires to fit in with hearing peers and embarrassment, as illustrated by the following response; *“some may be embarrassed about it and not want teachers or other students to know they have trouble hearing.”*. Twenty-three participants noted a range of negative responses from peers and social barriers students who are DHH may experience, as summarised by the following excerpts; *“being patronised”, “possible teasing”, “bullying”* and *“stigma from peers”*. Fourteen responses referred to social pressures to fit in with hearing peers and students who are DHH *“not wanting to be noticed as different”*. A few responses indicated that students with hearing loss missing out on dialogue contributes to social isolation. Some expressed the emotional impacts on students who are DHH, for example; *“may feel ostracised or like the odd one out”, “feelings of isolation in large groups of hearing peers.”* and *“social issues that stem from stress, anxiety, feeling pressure to fit in.”*. A few responses emphasised feelings of isolation in larger groups of students, larger class sizes and noisier environments. Some responses noted student frustrations, stress, and exhaustion, mainly due to hearing fatigue and needs not being understood or addressed.

#### *Student refusal of support/hearing device use*

Seventeen responses described students refusing to use hearing devices or specialized support. Most participants referred to students’ non-use of hearing aids, five commented on RM systems, four on targeted teacher accommodations, three on preferential-seating and three responses referred to teacher aids. Common factors identified to contribute to students’ reluctance to use hearing devices and specialized support include; social stigma, concerns of negative peer responses, embarrassment, not wanting others’ to know of hearing loss, student’s desire to fit in and not be differentiated from hearing peers. . For example, participants stated; *“some feel that they don’t want any peers to see them as having different needs, so don’t want aids/support that is obvious”* ; *“stigma around using the technology and being ‘different’”*. A few participants stated the impact of hearing device non-use on students’ learning and access to communication, as illustrated by the following responses; *“the fitting in leads to not wearing hearing aids, this leads to missed learning.”*; *“embarrassment around using equipment and therefore they don’t, so miss a lot of information”*.

Twelve responses noted the challenge of developing self-advocacy skills and the difficulties students may face without advocating their needs. Barriers to students practising self-



advocacy, suggested by responses include; social stigma, lack of self-confidence, embarrassment and perceived burden, as summarised by the following responses; *“feeling bad asking for help or “special treatment” (they should not feel like this, but in my experience they often do).”*; *“embarrassment over having to ask for things said to be repeated.”*. Response expressed the courage, confidence and persistence students require to advocate for their needs, make use of accommodations and hearing devices in mainstream school settings.

A few participants stated that students’ communication and management in mainstream school settings are affected by the students’ degree of hearing loss, stage of diagnosis in life, ability to lip read. Responses also stated that the challenges experienced are dependent on the individual student and setting.

#### mainstream placement limitations

Due to challenges identified in mainstream placement, such as; ineffective support and teaching adaptations, lack of teachers with knowledge and experience in supporting the needs of students who are DHH, limited time and resources for individualised support, lack of a community of peers who are DHH and NZSL users, a minority of responses expressed that mainstream placement may not offer the most benefit or adequately support students who are DHH. Inadequate support for students who are DHH in mainstream placement lead a minority of participants to consider that schools specialised in supporting students who are DHH may be better equipped with services to address the limitations identified in mainstream placement.

## **4 Discussion**

This study aimed to develop an understanding of New Zealand Secondary school teachers’ perspectives on educating students who are DHH. The study investigated teachers’ perspectives on the strengths of students who are DHH, as well as the perceived benefits and challenges of mainstream school placement for students who are DHH. Teachers’ knowledge, perceived level of skills and experiences of teaching adaptations for students who are DHH was also examined. Additionally, this study aimed to identify teachers’ professional educational needs to support their teaching of students who are DHH. This chapter aims to consider results from the survey in relation to the research questions and contrast with

relevant previous literature. The study implications, limitations and future research directions are also discussed.

A total of 134 participants fully completed the survey. Seventy-one percent ( $n = 95$ ) of participants indicated that they had at least one student who is DHH in any of their class. Over 80% of participants indicated they have taught at least one student who is DHH during their teaching career. A majority of teachers indicated they know someone who is DHH, consistent with previous research (Coombe, 2018; Lass et al., 1985).

### *Experiences teaching students who are DHH*

One of the research questions was directed towards evaluating teachers' knowledge and experiences' in educating who are DHH. Teachers reported a range of adaptations to support the learning of students who are DHH. Half of the responses (50%,  $n = 65$ ) cited the use of written educational communication or written resources to support their teaching and supplement verbal instructions. Eight percent of responses ( $n = 11$ ) described teaching with visual reinforcement of written and verbal teaching. Online learning platforms and digital resources were outlined by 13% of responses ( $n = 17$ ) to support students' learning and access to educational materials. Teachers reported uploading class materials, notices, class plans, summaries of class discussions and lesson recordings for students to during and outside of class times.

Almost half of the responses (43%,  $n = 56$ ) described strategies to facilitate students' who are DHH access to communication and spoken language. Teachers commonly referred to ensuring visibility for lipreading and reading body language, speaking clearly and concisely, facing towards students, and remaining in one position while instructing the class. Responses demonstrated a good general awareness of communication strategies for teaching students with hearing loss. One quarter of responses (25%,  $n = 33$ ) cited regularly checking with students who are DHH to directly ensure understanding of class tasks. Ultimately each student is likely to understand their specific needs and learning preferences, a few responses highlighted communicating with the student to gain an understanding of suitable teaching adaptations.

Approximately a third of responses (32%,  $n = 41$ ) cited the use of remote microphone (RM) systems in classrooms. Ninety-six percent of all participants ( $n = 129$ ) indicated that they

would be willing to wear a remote microphone device while teaching, consistent with findings of Roppolo (2016). Teachers could benefit from support to consistently use assistive listening devices in the classroom. Responses included minimal citations of using portable RMs and table microphones to assist hearing in peer discussions and small group work. Teachers could also benefit from greater awareness on the portable and table microphone functionality of assistive listening devices, considering the common use of collaborative classwork and modern classroom layouts in schools.

Approximately a third of responses (35%,  $n = 46$ ) referred to preferential seating arrangements, arranging seating locations in the class that support the hearing and learning of students who are DHH. In line with results from Roppolo (2016), almost all participants (99%,  $n = 133$ ) indicated a willingness to provide preferential seating for students who are DHH in the classroom. Teachers indicated an awareness on selecting seating locations in the classroom for optimal hearing, and a strong willingness to provide seating accommodations.

Two responses directly cited maintaining high academic expectations while teaching students who are DHH. In another section of survey, participants were asked to the extent they agreed or disagreed to the statement; “*students who are deaf or hard of hearing can achieve grades similar to their peers that are not deaf or hard of hearing*”. All participants responded with ‘*strongly agree*’ or ‘*agree*’ to the statement above, consistent with findings of Roppolo (2016). This finding indicates that the sample of teachers in this study perceive the academic capabilities of students who are DHH to be equivalent to their peers without hearing loss.

#### *Perceived strengths of students who are DHH*

Teachers’ perspectives of the strengths of students who are DHH, was explored to contribute to the research aim of developing an understanding of teachers’ perspectives of students who are DHH. Teachers were asked their perceived strengths of students who are DHH, the main strengths identified in the responses included; attentiveness, perseverance and resilience and non-spoken communication skills. Participants described students who are DHH to generally be active listeners in conversations and attentive to teaching instructions. Some responses noted the focus and conscientiousness students with hearing loss may exhibit to ensure they received information and understood learning tasks. Perseverance and resilience were also cited main strengths of students who are DHH. Responses described strong work ethics, ambitions to succeed, adaptability and problem solving skills. Participants depicted skills

used by students with hearing loss to manage potential challenges. Non-spoken communication skills were an additional main strength cited by teachers, these communication skills included; lipreading, reading body language cues, active listening and if known; sign language. Visual learning was perceived to be a strength of students who DHH are by 5% of responses ( $n = 6$ ). Rodrigues et al. (2022) evaluated teachers' perceived learning styles of students who are DHH, in a study with 133 preschool to secondary school teachers in Portugal and Sweden. The study found teachers to perceive students who are DHH to have enhanced visual learning skills compared to their hearing peers Rodrigues et al. (2022). In response to a closed ended question in the questionnaire used by Rodrigues et al. (2022), over half of the participants indicated students who are DHH to likely have better visual skills than their hearing peers. The low citation of visual learning skills in responses to an open ended question on the perceived strengths of students who are DHH in this study contrast with findings from Rodrigues et al. (2022). However, the instrument used in this study did not specifically analyse teachers' perceptions on visual learning styles, hence is it difficult to stipulate teachers' beliefs on the learning styles of students who are DHH and compare results from Rodrigues et al. (2022).

Other perceived strengths included; knowledge of DHH cultural perspectives and experiences, empathy and understanding of disabilities or needs of others . Overall, all the main strengths identified by participants appear to be related to approaches students with hearing loss use in accessing communication, compensating and overcoming challenges. As with any question on the general traits of a population, the strengths of students who are DHH are characteristic to each individual student and can be influenced by a wide range of factors. Not all factors can simply be attributed to a students' experience with hearing loss. Reflecting on both, the perceived strengths, and challenges of students with hearing loss was conducted to potentially broaden an understanding of teachers' perspectives and guide teaching strategies to support students who are DHH.

#### *Perspectives on the benefits of mainstream placement*

The main benefits of mainstream placement for students who are DHH outlined by respondents included; promoting social integration and skills for navigating settings beyond secondary school (54%,  $n = 71$ ), social interactions with a range of peers and development of communication skills (45%,  $n = 61$ ). Responses perceived mainstream placement to reflect diversity society in the classroom, socially normalise hearing impairment and provide

students who are DHH a sense of “normalcy”. Social integration in mainstream education settings was viewed to provide students who are DHH the opportunity to understand their needs, develop management strategies, communication skills and self-advocacy skills, as illustrated by the following response;

*“Experience in the real world - the world is not set up to accommodate them, so they get an understanding of what is easy and hard for them, and how to compensate or ask for help.”*

Similarly, McKee and Smith (2003) found teachers to perceive integration with hearing peers and becoming accustomed to ‘a mostly hearing society’, as major benefits of mainstream school placement for students who are deaf. McKee and Smith (2003) also stated that exposure to spoken language in mainstream school settings was beneficial for ‘normal’ communication skill development.

One quarter of responses (26%,  $n = 34$ ) viewed mainstream placement to expand hearing peers’ and teachers’ understanding of DHH experiences, culture, and approaches to support individuals with hearing loss. McKee and Smith (2003) also reported greater awareness of deafness among peers as a benefit of mainstream school placement. Around a fifth of responses (17%,  $n = 22$ ) stated that teaching practices inclusive of the needs of students who are DHH, such as the use of communication strategies and presenting information in a variety of accessible forms, can benefit the learning of a wide range of students and promote better teaching practices. Additional benefits of mainstream placement reported include; access to standardised academic expectations and wider curriculum (15%,  $n = 20$ ) as well as; access to equal educational opportunities and right to access local school of choice (27%,  $n = 36$ ). To facilitate access to inclusive education, it is important to understand the barriers and challenges by encountered in students who are DHH in mainstream settings.

#### *Perspectives on the challenges of students who are DHH and mainstream placement*

The second and third research questions involved understanding teachers’ perceived challenges of students of are DHH and perceived challenges of mainstream placement for students who are DHH. Themes predominantly overlapped in responses to the second and third, therefore the report of the thematic analysis was combined. The main challenges of students who are DHH and mainstream placement included; inadequate support, communication barriers and social barriers. The following factors were commonly cited as aspects of inadequate support for the inclusion of students who are DHH in mainstream

classrooms; inaccessible or unadapted teaching approaches and communication strategies, lack of teachers' awareness and training on supporting students who are DHH, teachers' limited time and resources, and low student to teacher ratios. Consistent with these factors, mainstream teachers in previous research reported a lack of teaching adaptations, time, support staff resources and knowledge to adequately support individual learning needs of deaf students in mainstream settings (McKee & Smith, 2003). A New Zealand-based study by Powell (2011) on experiences of tertiary students who are deaf found 60% of participants to not have received any Resource Teacher of the Deaf support in secondary school, with most participants reported to have attended mainstream secondary schools. Powell (2011) suggested at least annual degree of support would have been provided through ADOC, and support from RTDs may have not been readily accessible at the school or requested. As teachers indicated, students who are deaf or hard of hearing in mainstream schools may benefit from more regular support from professionals such as RTDs.

Communication barriers were often cited by participants as a challenge for students with hearing loss and mainstream placement. Responses noted the challenge of students accessing educational information and social dialogue with a hearing loss.

Additionally, a few responses noted students with hearing loss potentially missing background educational discussions in the classroom. Informal dialogue between teachers and peers in the classroom can contribute to a significant amount of students' learning. In previous research conducted by McKee and Smith (2003), missing aspects of teaching and social spoken communication were also identified by teachers as a main challenge for deaf students in mainstream classrooms. Class noise was a main factor cited to further challenge students' who are DHH access to academic and social communication in mainstream settings. Responses highlighted the importance of class noise management to facilitate a beneficial learning environment for students who are DHH. Similarly, McKee and Smith (2003) reported teachers to have concerns of on the impact of class noise and distraction on the learning of students who are deaf. Additionally, McKee and Smith (2003) found some teachers of students who are deaf to further detail the challenge of learning with competing visual demands, from focusing on sign-language interpreters and activities with information presented from visual multiple sources at a time. Teachers can benefit from greater awareness on the additional attention demands and difficulty of receiving information from multiple modes, for students who are DHH learning with interpreters (Pelz et al., 2008).

Missing instructions, social nuances and spoken dialogue were cited as potential barriers to students' full access to learning, participation in class, interactions in social discussions, and was perceived to contribute to social isolation. As part of research conducted by (Coombe, 2018) and Lass et al. (1985), teachers were asked their perceived '*worst consequence of hearing impairment*', from a choice of seven statements, the main factor selected was '*a feeling of isolation*'. These findings suggest teachers to be aware of the impacts on hearing loss on participation in communication and connecting with peers. Strategies for supporting access to communication are vital to setting an inclusive environment for students with hearing loss in mainstream classrooms. Social stigma around hearing loss and negative responses from peers such as "*teasing*" and "*bullying*", were cited as challenges for students who are DHH by a few responses. Responses commonly acknowledged the complexity of students who are DHH wanting to fit in with hearing peers and not wanting to be "*ostracised*" in mainstream school settings. A few responses indicated students' reluctance to use hearing devices and specialized support, some responses suggested negative social stigma and students not wanting to be differentiated from hearing peers as possible contributors to the students' decision. These factors are consistent with barriers to adolescents with hearing loss non-use of hearing devices, identified by Jefferis (2021) in a mixed-methods meta-synthesis of review of literature from the past two decades.

Consistent with findings from McKee and Smith (2003), a minority of responses expressed that mainstream placement may not offer the most benefit or adequately support students who are DHH due to limited individualised support, teachers with knowledge and experience in supporting the needs of students who are DH, lack of a community of peers who are DHH and NZSL users. Regular contact with peers communicating in sign language was further highlighted by some teachers of deaf students in research by McKee and Smith (2003) as an important factor in addressing social linguistic isolation in mainstream settings. As highlighted by McKee and Smith (2003), barriers to educational and social communication contrast with the inclusivity, and social integration perceived as benefits from mainstream placements for students who are DHH. The range of challenges identified in responses highlight the complexities and multi-factors associated with mainstream placement for students who are DHH. Ultimately, the benefits and challenges of general school placement for students who are DHH, require evaluation for each student when considering school environments to support the students' learning and social development.

### Information requested to support teaching students who are DHH

As previously reported, a lack of teacher knowledge and training on supporting students with hearing loss was viewed to be one of the main challenges for students who are DHH and mainstream placement. Most participants (76%,  $n = 102$ ) indicated that they have not attended a course that included information about hearing loss. Similarly, Coombe's research on New Zealand primary school teachers identified low numbers of teachers that have attended a course, suggesting a potential need for courses to provide New Zealand teachers background knowledge on educating students who are DHH (Coombe, 2018). The courses attended by a quarter of the participants (24%,  $n = 32$ ) were mostly reported to be part of specialised or additional tertiary education and professional development seminars at school. Thirteen percent ( $n = 4$ ) of the participants that attended a course, cited day courses and teaching support from Ko Taku Reo.

Consistent with Coombe's findings, participants' most common sources of information on supporting students who are DHH in their classroom were '*students who are hard of hearing or deaf*' and '*parents/caregivers of students who are hard of hearing or deaf*' (Coombe, 2018). The third most common source of information was '*self-taught (Internet, readings etc.)*', further highlighting the benefit of supporting teachers with resources or courses on educating students hearing loss. Participants were asked to rank their selected sources of information on hearing loss, to indicate where they gained the most knowledge. Participants predominately ranked '*Advisers on Deaf Children (AoDC)*' as the source where they gained the most information on supporting students who are DHH in their classroom, highlighting the importance and resourcefulness of Advisers on Deaf Children. To address the fourth research question, participants were asked to identify educational topics to assist their teaching of students who are DHH. The predominate education and information requested by teachers were; '*learning support strategies*' for '*students with hearing aids*' and '*students with implants*', '*strategies to communicate with students who are hard of hearing or deaf*' and '*promoting inclusion of students who are hard of hearing or deaf*'. The prominent responses are consist with Coombes' research findings of Primary school teachers' mainly requesting information on learning support strategies for students with hearing aids and implants (Coombe, 2018). To understand the participants' preferred mode of information, participants were asked to rank their preferred format of information to assist their teaching of students who are DHH. Overall, participants firstly ranked; '*in person course*', as their most preferred format and secondly; '*consultation with relevant professionals (e.g. Adviser*



on Deaf Children)’. Online courses, educational videos and information sheets were overall ranked lower by participants, although can serve as accessible options of support for teachers to refer to.

#### **4.1 Clinical implications**

Consistent with findings from research by Coombe (2018) on New Zealand primary school teachers, audiologists were not identified as having a direct role in providing classroom hearing management strategies to secondary school teachers of students who are DHH. Professional networks between teachers and audiologists, can support teachers in understanding the specific auditory and communication needs of students who are DHH in their classroom. Students who are DHH and their parents/caregivers, were the predominate sources of teachers’ knowledge on classroom management strategies, highlighting the importance of supporting advocacy needs and understanding of hearing loss management, in family-centred audiological care.

#### **4.2 Study limitations**

Although the sample size ( $n = 134$ ) was adequate, it represented a very small percentage of the overall target group. This was likely due to several challenges related to work demands and covid-19..... Researched conducted by the Australian Council for Educational Research (ACER), commissioned by the Ministry of Education, on NZ Secondary School teachers’ workloads in 2004 ( $n = 1150$  teachers), found most teachers to describe their workload as ‘heavy’ (Ingvarson et al., 2005). The recruitment period for this study occurred in 2021, whilst teachers were dealing with adjustments to teaching with covid restrictions and a national, on-going Covid-19 lockdown. Schools were managing online learning and preparations for students’ upcoming examinations. Several schools and teachers expressed that workload demands and time constraints during this period restricted potential participation in the study.

The use of an online survey in this study, where respondents self-select to participate is subject to self-selection bias. The results and perspectives identified can potentially reflect a bias towards respondents with interests or experiences related to the research topic, who may have been more willing to participate in the study. For example, it is possible that the sample was biased towards respondents with experiences with hearing loss or teaching students who are DHH, student advocacy or developed perspectives on inclusive education. The high

portion of teachers with students who are DHH in their class, could indicate a greater interest of these teachers participating in the study, compared to teachers without students who are DHH in their class. Roppolo (2016) suggested that self-selection biases possibly contributed to their finding teachers' overwhelming positive attitudes towards inclusion of DHH students in mainstream classroom. Although, this study also found a majority of positive attitudes towards inclusion of DHH students among participants, it is difficult to estimate the contribution of selection bias on the study findings, without comparing responses from non-participants (Bethlehem, 2010). The sample of 134 teachers who opted to participate in this study, may not fully represent all of the characteristics and perspectives of New Zealand secondary school teachers. It is important to note the total number of 134 participants samples 0.04% of the total number of New Zealand secondary school teachers ( $n = 30172$ ), according to data from the Ministry of Education in 2020 (Counts, 2020). The sampled teachers represented similar gender and age group demographics of New Zealand secondary school teachers (Counts, 2020).

Online surveys have limitations in the level of depths of information obtain from participants, with no options to seek specific clarifications of responses or further insights from participants. Although the survey was anonymous, social desirability bias, especially around ideals of inclusive education, may factor into the responses received in the study. Furthermore, removal or combination of overlapping questions in the survey instrument such as the opened ended questions on the perceived challenges of students who are DHH and the question on the perceived challenges of mainstream placement, would produce a more concise survey and allow for a shorter completion time.

### **4.3 Future research**

Research on secondary school teachers perspectives and professional development needs for supporting students who are DHH in the New Zealand context is limited and requires additional in-depth research. Research from the perspectives and experiences of secondary students who are DHH is vital to understanding any support needed to facilitate inclusive education. Similarities and discrepancies between the perspectives of teachers and students who are DHH on the adaptations needed, challenges experienced and benefits of mainstream placement, can guide improvement of support provided. Considering the common involvement of parents and caregivers in communicating information on managing hearing needs to teachers of students who are DHH, research on the perspectives of parents and

caregivers may also broaden insights on the experiences of students who are DHH in mainstream schools and help direct support needed.

Supportive professionals including Resource Teachers of the Deaf, Advisers on Deaf Children, teaching assistants, NZSL interpreters, have a critical role in the educational experiences of students who are DHH. Investigating the experiences, perspectives on collaborations with teachers and work needs of paraprofessionals, may assist in identifying approaches to effectively support services for students who are DHH.

## **5 Conclusion**

A New Zealand based study reported 95% of students who are DHH to attend mainstream schools (Statistics New Zealand, 2008; Powell & Hyde, 2014). The New Zealand Education Act (1989) protects the right of all students to education in New Zealand state schools. Participating as signatories to the United Nations Convention on the Rights of Persons with Disabilities (2007), presents a commitment to promoting an inclusive society and providing inclusive education (Ministry of Social Development, 2016). Is important for teachers' to be equipped with the knowledge and skills on supporting students who are deaf or hard of hearing, to ensure equitable access to quality learning.

Limited awareness on teaching support strategies were cited as one of the main challenges for students who are DHH in mainstream school. Teachers are currently gaining their knowledge on supporting students who are DHH from students themselves, their parents/caregivers and through self-directed learning. Teachers requested resources on supporting students who are DHH in the classroom, through consultations with relevant professionals such as Advisers on Deaf Children and in-person courses. Few teachers reported attending a course with information on hearing loss. Teachers requested information on learning strategies for students who are deaf and students who are hard of hearing, as well as promoting inclusion of students who are DHH. Results suggested a need for the availability of resources, professional development courses and opportunities for inter-professional collaboration, to support New Zealand secondary school teachers in providing equitable education to students who are deaf or hard of hearing.

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## 7 Appendices

### 7.1 Appendix A. Ethics Approval and Amendments



Ref: HEC 2021/103

2 September 2021

Lema Al-Sakkaf  
School of Psychology, Speech and Hearing  
UNIVERSITY OF CANTERBURY

Dear Lema

The Human Ethics Committee advises that your research proposal “New Zealand Secondary School Teachers’ Knowledge and Experience of Supporting Hard of Hearing or Deaf Students” has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your emails of 20<sup>th</sup> and 30<sup>th</sup> August 2021.

Best wishes for your project.

Yours sincerely

*R. Robinson*  
pp.

Professor Geoffrey Rodgers  
**Deputy Chair**  
*University of Canterbury Human Ethics Committee*

## 7.2 Appendix B. Study Information, Consent, and Survey

School of Psychology, Speech and Hearing  
Email: [lema.al-sakkaf@pg.canterbury.ac.nz](mailto:lema.al-sakkaf@pg.canterbury.ac.nz)  
HREC Ref: HEC 2021/103

### **New Zealand Secondary School Teachers' Perspectives and Experiences of Supporting Hard of Hearing or Deaf Students** ***Information Sheet for online survey participants***

Kia ora,

I am undertaking a research project that aims to understand secondary school teachers' perspectives and experiences of supporting hard of hearing or deaf students. The study is being carried out as a requirement for the completion of a Master's of Audiology at the University of Canterbury.

#### **What is the purpose of this research?**

This anonymous online questionnaire is designed to provide information to (a) help understand perspectives and experiences of teachers, and (b) inform support services for teachers and hard of hearing or deaf students and any relevant personal experiences.

#### **Why have you received this invitation?**

You have been invited to participate in this research because you are a New Zealand secondary school teacher of students in year 9 to year 13. You have responded to an online post or an email message about the study.

#### **What is involved in participating?**

Your participation is voluntary (your choice). If you decide not to participate, there are no consequences and your relationship with the University of Canterbury or any member of the research team (if any) will not be affected.

If you choose to take part in this research, please complete the online survey that follows this information page. The survey involves answering questions about;

- Perspectives and experience of supporting hard of hearing and deaf students.
- Tools to help hard of hearing and deaf students.
- Sources of knowledge.
- Information and education needs of teachers.

This is estimated to take around 10 to 15 minutes to complete.

#### **Are there any potential benefits from taking part in this research?**

Completing the survey may support your existing knowledge or expose you to new information. The option to enter the draw for one of six \$50 vouchers is also a potential benefit.

#### **Are there any potential risks involved in this research?**

Some questions ask about your experiences, if any of the questions cause you to feel upset please consider contacting one of the agencies listed below here –

[www.1737.org](http://www.1737.org) (to access a trained counsellor)

<https://www.nfd.org.nz> (National Foundation for Deaf and Hard of Hearing)

<https://www.audiology.org.nz> (NZ Audiology Society for information about contacting audiologists)

### **What if you change your mind during or after the study?**

You are free to withdraw at any time up until the point that you submit your responses. To do this, simply close your browser window or the application the survey is being presented on. Any information you have entered up to that point will be deleted from the data set. As this is an anonymous survey, it will not be possible to withdraw your information after you have completed the survey.

### **What is the prize draw?**

After completing the survey, you can choose to enter a random prize draw for one of six \$50 vouchers. This will involve clicking a link which will take you to another survey page where you can enter your contact information, which will not be able to be linked with your survey responses.

### **What will happen to the information I provide?**

All data will be anonymous. We will not be able to identify you or link your identity with any responses you provide. All data will be stored on the University of Canterbury's computer network in password-protected files.

All data will be destroyed five years after completion of the publication of study findings. The data is only accessible by me and my supervisors for the purposes mentioned in this information sheet.

### **Will the results of the study be published?**

The results of this research will be published in a Master's thesis, which is available to the general public through the UC library. Results may be published in peer-reviewed, academic journals and during conference or seminar presentations to broader professional and academic communities. You will not be identifiable in any publication.

I will send a summary of the research to you at the end of the study, if you request this. If you provide an email address for this purpose, this will not be able to be linked with your survey responses.

### **Who can I contact if I have any questions or concerns?**

If you have any questions about the research, please contact: Lema Al-Sakkaf - email: [lema.al-sakkaf@pg.canterbury.ac.nz](mailto:lema.al-sakkaf@pg.canterbury.ac.nz); Associate Professor Dean Sutherland (Primary supervisor) – email: [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz).

This study has been reviewed and approved by the University of Canterbury Human Research Ethics Committee (HREC). If you have concerns or complaints about this research, please contact the Deputy Chair of the HREC at [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz).

### What happens next?

If you would like a PDF version of this information sheet, please email Lema Al-Sakkaf, at the email address above.

Please read the following statement of consent and start the survey below.

### Consent to Participate

- I have read the study information above and understand what is involved in participating.
- I understand that participation is voluntary. I know that I am free to withdraw at any time until I select to submit my responses at the end of the survey. I know I can withdraw by exiting the browser window or the application the survey is presented on, and I understand that information entered up to that point will be deleted from the data set. As this is an anonymous survey, I understand that it will not be possible to withdraw information after submitting the completed survey.
- I understand that all data will be anonymous. I understand that any survey responses I provide will not identify me.
- I understand that the responses will be kept private to the researchers. I know that any published or reported results will not identify me. I know that all data collected for the study will be stored on the University of Canterbury's computer network in password-protected files and will be destroyed after five years.
- I understand that I can contact the researcher by emailing [lema.al-sakkaf@pg.canterbury.ac.nz](mailto:lema.al-sakkaf@pg.canterbury.ac.nz); or primary supervisor Associate Professor Dean Sutherland, by emailing [dean.sutherland@canterbury.ac.nz](mailto:dean.sutherland@canterbury.ac.nz) for further information. If I have any complaints, I can contact the Deputy Chair of the University of Canterbury Human Research Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz))

By completing the survey and submitting my responses, I consent to participate.

---

Q2 Do you currently teach students in Years 9 to 13 at a secondary school located in Aotearoa New Zealand?

- Yes (1)
- No (2)

---

Q3 Demographic questions

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Q4 Are you?

- Female (1)
  - Male (2)
  - Non-binary (3)
  - Not Listed (Prefer to self-describe): (4)
- 

Prefer not to say (5)

---

Q5 What is your age group?

- 20-29 years (1)
  - 30-39 years (2)
  - 40-49 years (3)
  - 50-59 years (4)
  - 60-69 years (5)
  - 70 + (6)
-

Q6 Please describe the school you teach at (select all that apply)

- Secondary school (years 9-13) (1)
  - Composite school (years 1-13) (2)
  - Restricted composite (e.g. years 11-13, years 7-10) (3)
  - Te kura kaupapa Māori (4)
  - Private school (5)
  - Designated character school (6)
  - Specialist school (7)
  - Regional health school (8)
  - Teen parent unit (9)
  - Te Kura (formerly The Correspondence School) (10)
  - Other (please describe): (11)
- 

Q7 Which area is the school you teach at located in?

- Metropolitan area (more than 100,000 residents) (1)
  - Large regional centre (30,000–99,999 residents) (2)
  - Medium regional centre (10,000–29,999 residents) (3)
  - Small regional centre (5,000–9,999 residents) (4)
  - Area outside functional urban area (less than 5,000 residents) (5)
-

Q8 How many years have you been teaching secondary school students? (Drag the slider to the right to indicate the number of years)

0 5 10 15 20 25 30 35 40 45 50

0 

Q9 Other than your teaching qualification, do you hold any other qualifications?

- Yes (1)  
 No (2)

*Display This Question:*

*If Other than your teaching qualification, do you hold any other qualifications? = Yes*

Q10 What other qualifications do you hold (in addition to your teaching qualification)?

\_\_\_\_\_

Q11 Which year group do you currently teach? (select all that apply)

- Year 9 (1)  
 Year 10 (2)  
 Year 11 (3)  
 Year 12 (4)  
 Year 13 (5)

Q12 What subject(s) do you teach? (select all that apply)

- Accounting (1)
  - Biology (10)
  - Business Studies (11)
  - Chemistry (12)
  - Digital Technologies (13)
  - Drama (14)
  - Economics (15)
  - English (16)
  - Maths (17)
  - Music (18)
  - Physical Education (19)
  - Physics (20)
  - Science (21)
  - Te Reo Māori (22)
  - Visual Arts (24)
  - Other (please state) (25)
- 

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Q13 How many classes do you currently teach? (Drag slider to the right to indicate number of classes)

0 1 2 3 4 5 6 7 8 9 10 11 12





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Q14 The following questions are designed to gauge your perspectives and experience related to hard of hearing and deaf students.

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Q15 This information clarifies terms used in further questions:

The term "**hard of hearing**" refers to people with partial hearing that ranges from mild to profound in severity.

The term "**deaf**" refers to people with no hearing. Without amplification (e.g. cochlear implant, bone-anchored hearing aid or hearing aids) people with profound hearing losses cannot hear sounds at normal levels.

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Q17 In your opinion, what are the challenges of a hard of hearing or deaf student?

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Q18 In your opinion, what are the strengths of a hard of hearing or deaf student?

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Q16 How many of the students you currently teach are hard of hearing or deaf?

- none (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 or more students (6)
- I don't know (7)

Q19 The photos on the next screen help clarify the difference between a hearing aid, cochlear implant, bone-anchored-hearing-aid (BAHA) and remote microphone (RM) as they are worn by students and teachers. They are collectively known as hearing devices. This information relates to following questions

---

*Display This Question:*

*If How many of the students you currently teach are hard of hearing or deaf? != none*

Q20 How many of the hard of hearing or deaf students in your classroom(s) wear hearing aids to hear speech?

- none (1)
  - 1 (2)
  - 2 (3)
  - 3 (4)
  - 4 (5)
  - 5 or more students (6)
  - I don't know (8)
- 

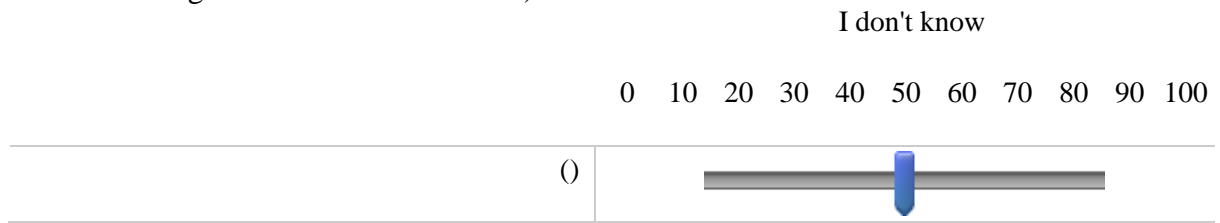
*Display This Question:*

*If How many of the students you currently teach are hard of hearing or deaf? != none*

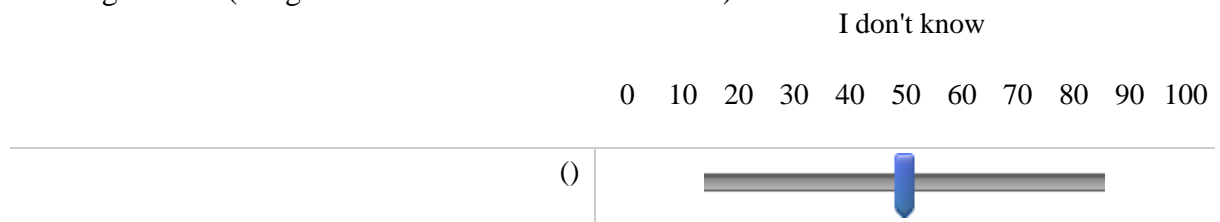
Q21 How many of the deaf students in your classroom(s) wear a cochlear implant to hear speech?

- none (1)
  - 1 (2)
  - 2 (3)
  - 3 (4)
  - 4 (5)
  - 5 or more students (6)
  - I don't know (8)
-

Q23 Approximately how many students in your school are hard of hearing or deaf? (Drag slider to the right to indicate the number)



Q24 Approximately, how many hard of hearing or deaf students have you taught over your teaching career? (Drag the slider to indicate the number)



Q25 Please describe any specific changes you made to your teaching practice to accommodate hard of hearing or deaf students?

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Q26 What hearing devices and accessories have you had experience with and used to modify your teaching for hard of hearing or deaf students? (Tick if any apply)

- Hearing Aids (1)
  - Cochlear Implants (2)
  - Bone Anchored Hearing Aids (BAHA) (3)
  - Remote Microphones (or FM systems) (4)
  - Other (please describe): (5)
- 

Q27 How would you rate your level of knowledge with these hearing aid devices and accessories to modify your teaching for hard of hearing or deaf students?

	No knowledge (1)	Low level of knowledge (2)	Moderate level of knowledge (3)	High level of knowledge (4)
Hearing Aids (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cochlear Implants (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bone Anchored Hearing Aids (BAHA) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Remote Microphones (or FM systems) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q28 Would you be willing to wear a remote microphone device to promote listening for a hard of hearing or deaf student?

- Yes (1)
  - No (4)
  - Maybe (5)
  - Unknown (6)
- 

Q29 Would you be willing to provide preferential seating for hard of hearing or deaf students?

- Yes (1)
  - No (4)
  - Maybe (5)
  - Unknown (6)
- 

Q30 The following section aims to understand your perspectives on teaching hard of hearing and deaf students. Please answer all questions in this section, regardless of whether or not you have taught a deaf or hard of hearing student.

Q31 My feelings about including students who are deaf or hard of hearing in mainstream classrooms are as follows:

- All students who are deaf or hard of hearing should be educated in a mainstream classroom. (4)
  - Most students who are deaf or hard of hearing should be educated in a mainstream classroom. (3)
  - Some students who are deaf or hard of hearing should be educated in a mainstream classroom. (2)
  - No students who are deaf or hard of hearing should be educated in a mainstream classroom. (1)
-

Q32 Please indicate the degree to which you agree or disagree with the following statements.

---

Q33 Students who are deaf or hard of hearing could most likely go to university if they choose.

- Strongly Agree (5)
  - Agree (4)
  - Neither agree nor disagree (3)
  - Disagree (2)
  - Strongly disagree (1)
- 

Q34 Students who are deaf or hard of hearing can achieve grades similar to their peers that are not deaf or hard of hearing.

- Strongly Agree (5)
  - Agree (4)
  - Neither agree nor disagree (3)
  - Disagree (2)
  - Strongly Disagree (1)
-



Q35 I understand the implications that hearing loss has on education.

- Strongly Agree (5)
  - Agree (4)
  - Neither agree nor disagree (3)
  - Disagree (2)
  - Strongly Disagree (1)
- 

Q36 I feel prepared to teach students who are deaf or hard of hearing.

- Strongly Agree (5)
  - Agree (4)
  - Neither agree nor disagree (3)
  - Disagree (2)
  - Strongly Disagree (1)
- 

Q37 I would feel comfortable having an interpreter or teacher of the deaf or hard of hearing working in my classroom.

- Strongly Agree (5)
  - Agree (4)
  - Neither agree nor disagree (3)
  - Disagree (2)
  - Strongly Disagree (1)
-

Q38 Any deaf and hard of hearing students attending my school can receive adequate services to meet their needs and ensure their progress in the general education curriculum.

- Strongly Agree (5)
  - Agree (4)
  - Neither agree nor disagree (3)
  - Disagree (2)
  - Strongly Disagree (1)
- 

Q39 What do you see as the main benefits for a hard of hearing or deaf student being in a mainstream class?

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Q40 What do you see as the disadvantages or difficulties for a hard of hearing or deaf student being in a mainstream class?

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**End of Block: Hard of Hearing and Deaf students**

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**Start of Block: Personal Hearing loss**

Q41 Are you hard of hearing or deaf?

- Yes (1)
  - No (2)
- 

Q42 Do you know anyone personally who is hard of hearing or deaf?

- Yes (1)
  - No (2)
- 

Q43 The following questions are designed to gain an understanding of your experience with sources of information related to hearing loss and deafness.

---

Q44 Have you ever attended a course that included information about hearing loss, deafness or hearing disorders?

- Yes (1)
  - No (2)
- 

*Display This Question:*

*If Have you ever attended a course that included information about hearing loss, deafness or hearing... = Yes*

Q45 Please describe the course(s) (e.g. title, duration of the course, topics covered, course provider etc if known.)

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Q46

Do you know how to use the New Zealand Sign Language (NZSL)?

- No (1)
  - Only a few basic signs (2)
  - Yes, moderately well (3)
  - Yes, fluently (4)
- 

Q47 Where have you gained your knowledge on supporting hard of hearing or deaf students in your classroom? (Tick all that apply)

- Parents/caregivers of hard of hearing or deaf students (1)
  - Hard of hearing or deaf students (2)
  - Course I attended related to hard of hearing or deaf students (11)
  - Teacher Colleagues (3)
  - Adviser on Deaf Children (AoDC) (4)
  - Resource Teacher of the Deaf (RTD) (5)
  - Paraprofessionals (e.g. Teacher Aid, ASSIST, Educational Support Worker) (6)
  - Audiologist (7)
  - Self-taught (Internet, readings etc.) (8)
  - Resource Teacher for Learning and Behaviour (RTLBB). (Please specify) (9)
- 
- Other (please explain) (10)
-

Display This Question:

If Where have you gained your knowledge on supporting hard of hearing or deaf students in your class...  
q://QID39/SelectedChoicesCount Is Greater Than or Equal to 2

Carry Forward Selected Choices - Entered Text from "Where have you gained your knowledge on supporting hard of hearing or deaf students in your classroom? (Tick all that apply)"

Q48 Where did you gain the most knowledge on teaching hard of hearing or deaf students in your classroom? (Rank in order with "1" providing you the most knowledge. Items can be clicked on then moved)

- Parents/caregivers of hard of hearing or deaf students (1)
  - Hard of hearing or deaf students (2)
  - Course I attended related to hard of hearing or deaf students (3)
  - Teacher Colleagues (4)
  - Adviser on Deaf Children (AoDC) (5)
  - Resource Teacher of the Deaf (RTD) (6)
  - Paraprofessionals (e.g. Teacher Aid, ASSIST, Educational Support Worker) (7)
  - Audiologist (8)
  - Self-taught (Internet, readings etc.) (9)
  - Resource Teacher for Learning and Behaviour (RTLB). (Please specify) (10)
  - Other (please explain) (11)
-

Q49 If you have a hard of hearing or deaf student in your class, what education or information about hearing loss or hearing disorders would assist your teaching practice? (tick all that apply)

- The impact of hearing loss on learning and development (1)
  - Learning support strategies for students with hearing aids (2)
  - Learning support strategies for students with implants (3)
  - How to use assistive listening technology such as remote microphone systems (4)
  - Strategies to communicate with hard of hearing or deaf students (5)
  - Assessing the learning of hard of hearing or deaf students (6)
  - Identifying of hard of hearing or deaf students (7)
  - Promoting inclusion of hard of hearing or deaf students (8)
  - Other (please explain) (9)
- 



Q50 What would be your preferred format of information to support you teaching hard of hearing and deaf students? (Rank in order, with "1" being your most preferred format)

- \_\_\_\_\_ Information sheet (1)
  - \_\_\_\_\_ Educational video (2)
  - \_\_\_\_\_ Online course (3)
  - \_\_\_\_\_ In-person course (4)
  - \_\_\_\_\_ Consultation with parents/caregivers (5)
  - \_\_\_\_\_ Consultation with relevant professionals (e.g. Adviser on Deaf Children) (7)
  - \_\_\_\_\_ Other (please state): (6)
- 

Q51 You are coming towards the end of the survey, please feel free to leave comments below if you have any.

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Q52 Do you have any further comments on your experience of teaching hard of hearing and deaf students?

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Q53 Do you have any further comments on the information and resources you would like to receive to support hard of hearing and deaf students?

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Q54 Thank you for your time spent completing this survey - it is much appreciated.

Please select if you wish to go in the draw for one of six \$50 MTA or grocery gift vouchers

- I would like to enter the draw for one of six \$50 MTA gift vouchers (1)
- I would like to enter the draw for one of six \$50 Grocery gift vouchers (4)
- No, I would not like to enter the draw for a gift voucher (3)

---

Q55 Please indicate if you would like to receive a summary of the study results.

- I would like a summary of the study results sent to me (1)
  - No, I would not like a summary of the study results sent to me (2)
-

*If Thank you for your time spent completing this survey - it is much appreciated.*

*Please select if... != No, I would not like to enter the draw for a gift voucher*

*Or Please indicate if you would like to receive a summary of the study results. = I would like a summary of the study results sent to me*

Q56 Please provide your email

address \${e://Field/Qdraw\_only}\${e://Field/Qsummary\_only}\${e://Field/Qdraw\_and\_summary}

Your contact information will be kept separate from the survey you have completed.

Email (2) \_\_\_\_\_

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### 7.3 *Appendix C. Survey Recruitment Advertisements*

Re: Research: Survey of Teachers' perspectives on students with hearing loss.  
Tēnā koe,

My name is Lema Alsakkaf, I am a student at the University of Canterbury studying towards a Master of Audiology. I am conducting a study that aims to develop an understanding of New Zealand Secondary School teachers' perspectives and experiences of supporting hard of hearing or deaf students.

I am looking for New Zealand Secondary School teachers to complete a short online questionnaire that includes questions about;

- Experiences with hard of hearing or deaf students.
- Perspectives on hard of hearing or deaf students.
- Understanding of hearing loss.
- Sources of information about hearing losses.
- Professional learning needs related to hard of hearing and deaf students.

The questionnaire takes approximately 10-15 minutes to complete. After completing the questionnaire, participants can elect to enter a draw for one of six \$50 MTA or grocery gift vouchers. I would be grateful if you could share this with Secondary School teachers you work with and if any Secondary School teachers would consider participation. Please click on the link below if you wish to take part in the study.

[http://canterbury.qualtrics.com/jfe/form/SV\\_eLlfy9pxyljDwi](http://canterbury.qualtrics.com/jfe/form/SV_eLlfy9pxyljDwi)

Thank you