EXPLORING THE USE OF AUDITORY AND VERBAL STRATEGIES AND

SPECIFIC VISUAL TEACHING SYSTEMS OF ITINERANT TEACHERS

OF STUDENTS WHO ARE DEAF AND HARD-OF-HEARING

by

Patricia Mable Teresa Kincaid

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Abstract

This qualitative study explored the experiences of itinerant teachers supporting students who are Deaf and Hard-of-Hearing develop literacy skills using auditory and verbal strategies and specific visual teaching systems. Data was collected during semi-structured interviews which examined the experiences of the participants and how they accommodated Deaf and Hard-of-Hearing students to acquire phonemic awareness and phonological processing. The data was analyzed and revisited until categories and sub-categories emerged.

The findings are presented of four itinerant teachers who described their experiences supporting Deaf and Hard-of-Hearing students educated within mainstream classroom settings. The participants supported Deaf and Hard-of-Hearing students within a mainstream educational model with intervention-based support. Intervention was provided based upon student need. As well, the data revealed the participants provided education in-servicing to other teachers to help meet the needs of their Deaf and Hard-of-Hearing students. Participants reported providing progress monitoring of students with lesser needs and servicing of assistive equipment. Data revealed the participants used an auditory and verbal approach to teaching literacy to Deaf and Hard-of-Hearing students. This aligned with their school boards' educational model and instructional approach.

The pursuit of linguistic education within the Deaf community is distinctly different from that of the hearing world. Future research should investigate the experience of teachers in a provincial school for the Deaf and Hard-of-Hearing where a bi-cultural approach to literacy is found. Further, the influence of assistive technology, restorative technology, and hearing devices will interact with acquisition of phonemic

awareness and phonological processing. How technology interacts and influences Deaf

culture in relation to the persistence and continuation of American Sign Language as a

form of communication may interest future researchers.

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Chapter 1. Introduction

Statement of the Problem

The purpose of this study was to explore the experience of itinerant teachers supporting students who are Deaf or Hard-of-Hearing develop literacy skills within inclusive classroom settings. Relying on self-reported data, the following questions examined the experiences of the participants and how they accommodated students who are Deaf or Hard-of-Hearing to acquire phonemic awareness and phonological processing skills: (i) How are the resources and instruction modified to meet the specific needs of the students who are Deaf or Hard-of-Hearing within the inclusive classroom? (ii) What environmental adaptations are the itinerant teachers reporting they are making to the physical learning space to accommodate the students who are Deaf or Hard-of-Hearing? (iii) What specific visual teaching systems are the itinerant teachers reporting they are using in their literacy instruction to meet the learning needs of students who are Deaf or Hard-of-Hearing in the inclusive classroom?

Based upon the principle of inclusion, Canadian classrooms reflect the diversity of the learners found in society. With the creation of the *Canadian Human Rights Act* (1977), people are protected against discrimination based upon mental and physical disability. In 1982, the *Charter of Rights and Freedoms* within the Canadian Constitution further protected the rights of individuals with disabilities from discrimination based upon their disability. Specifically within Ontario, the legislation of Bill 82 guaranteed the rights of people with disabilities to inclusion-based education. This *Education Amendment Act* (1980) mandated that school boards offer special education services to support diverse learners. However, school boards could decide to administer these

services in self-contained environments which prevented inclusion from occurring (Ontario Ministry of Education, 2005). In 1998, Regulation 181 was passed and stopped the immediate placement of students into separate specialized programs. Instead, exceptional learners were first required to be placed in general classrooms with the supports and accommodations necessary for their inclusion (Ontario Ministry of Education, 2005). Consequently, students who were Deaf or Hard-of-Hearing (DHH) would receive orally-based instruction within an inclusive classroom setting.

DHH is a communication exceptionality which requires visual support of audio produced information (Hutchinson, 2009). Historically, DHH children encounter more literacy difficulties than their peers with normal hearing (Lieu, 2004). The connection between literacy skills and academic retention is well documented and accepted (Leybaert, 2005; Lieu, 2004; Trezek & Malmgren, 2005). Leybaert (2005) and Trezek and Malmgren (2005) found DHH high school graduates have reading abilities that are comparable to non-impaired hearing Grade 4 students. This finding may lead to the incorrect conclusion that DHH students cannot develop reading skills similar to their hearing peers. However, the general classroom educator may not be prepared to meet the learning needs of students who are DHH.

According to Bennett, Dworet, and Weber (2008) teachers may not receive professional development training necessary to prepare them for working with students with this low incident exceptionality. Bennett et al. (2008) also stated that teacher candidate preparation for special education is limited to specialization courses. The implementation of curriculum and resources for these courses is not universal nor does the Ontario College of Teachers ensure a teaching standard is provincially met. At the

post-graduate level, additional training in DHH education is available only after certification and cannot be completed until a teacher has taught for a prerequisite amount of time (Ontario College of Teachers, 2011). Further, the certification is either completed online or on campus. Online certification is a tiered program which does not offer interaction with peers and instructors. There are a few programs (e.g., York University) which offer training on-site. However, financial and social costs of relocation may restrict individuals from pursuing DHH education. Therefore, while inclusion is a provincially mandated goal, the teachers who enact the curriculum and construct the elementary and secondary learning environment, may be unprepared to meet the immediate needs of their DHH students.

Rationale Based on Experience

This research is motivated by my professional and personal experiences of interacting with people who are Deaf or Hard-of-Hearing. I have supported students with various abilities in both self-contained and inclusion classrooms. As a former educational assistant and a community resident worker, full community participation was the goal for all of my students or clients. When I became a certified primary-junior teacher, these perspectives were further developed in my philosophy of differentiated instructional practice. Consequently, I have professional experience supporting learners who were DHH within the classroom. On a personal level, I am a mother of two children who have hearing loss and who are being educated within an inclusive classroom through an auditory and verbal approach. The birth of my children occurred after I was an educational assistant and before I became a teacher. The experience of caring and advocating for my children has influenced my teaching philosophy and the focus of this

study.

Definition of Terms: Deaf and Hard-of-Hearing, Phonemic Awareness and

Phonological Processing, and Specific Visual Teaching Systems

There are three main terms the reader needs to be familiar with throughout this

thesis: Deaf and Hard-of-Hearing, phonemic awareness and phonological processing, and

specific visual teaching systems.

Deaf and Hard-of-Hearing.

Since the literature reviewed for this thesis was mostly American and the data

collected was sampled from Canadian sources, there was a need to use a standard term to

cover the variety and levels of hearing impairments. In addition, there are also people

within the literature who do not self-identify as "dis" abled. Since the emphasis of this

thesis was on the experience of the itinerant teacher and not on the hearing loss itself, I

did not try to categorize the type of hearing loss experienced in the classroom. Although a

brief synopsis of the etiology of Deaf and Hard-of-Hearing is found in Chapter Two, I

purposely used a particular term to capture the variety of hearing impairments which

exist within the classroom environment. Please note that the term "Deaf and Hard-of-

Hearing" does not replace the word Deaf or its cultural implications in this thesis.

Phonemic awareness and phonological processing.

Both phonemic awareness and phonological processing requires an understanding

of how the units of an alphabetic language operate. Phonemic awareness involves the

ability to manipulate the smallest linguistic composition of words. Understanding each

written letter symbol or letter combination that corresponds to an oral sound is

fundamental to the alphabetical principle (Ehri, 2005). Clark, Yallop, and Fletcher

estimated the number of phonemes in English to be 40-45 (as cited by Nanda & Warms, 2010). This number can fluctuate depending upon the dialect of English being studied.

Phonological processing involves the hierarchal skills of sound discrimination from sentences to words (Andreassen & Smith, 2008). This includes rhyming and syllabification. Phonological activities become progressively more difficult as units of language are dissected to their phonemes (Chard & Dickson, 1999). As such, children may find it easier to learn a rhyming song then to segment a word into its individual parts (Chard & Dickson, 1999). Traditionally, these skills are thought to be transferred mainly through listening and speaking (Perfetti & Sandak, 2000).

Specific visual teaching systems.

Since DHH students have reduced access to auditory information, the visual receptor becomes an important focus for literacy instruction. Specific visual teaching systems use physical gestures and some of these systems use written symbols to reinforce the auditory representation of the phoneme. Lip-reading is also employed in some systems as a visual method to reinforce the phonetic information. The principle of these specific visual teaching systems is that phonemic and phonological information can be transferred via a visual medium.

Overview of Thesis

The literature review will follow in the second chapter of this thesis to inform the thesis questions. The literature review is organized into the following five categories: The Etiology of Deaf and Hard-of-Hearing, Academic Consequences for Students who are Deaf and Hard-of-Hearing Hearing, Ehri's Reading Model, Visual Instructional Methods, and Discussion of the Literature. The literature review was used to inform the purpose of

the study which is to describe the experience of itinerant teachers and how they are accommodating students who are Deaf and Hard-of-Hearing to acquire phonemic awareness and phonological processing within inclusive learning environments. Chapter Three explains the method used for data sampling, collecting, and analysis. The results are found in Chapter Four and Chapter Five is comprised of the discussion.

Chapter 2. Literature Review

The purpose of this study was to explore the experience of itinerant teachers supporting students who are Deaf or Hard-of-Hearing develop literacy skills within inclusive classroom settings. Relying on self-reported data, the following questions examined the experiences of the participants and how they accommodated students who are Deaf or Hard-of-Hearing to acquire phonemic awareness and phonological processing skills: (i) How are the resources and instruction modified to meet the specific needs of the students who are Deaf or Hard-of-Hearing within the inclusive classroom? (ii) What environmental adaptations are the itinerant teachers reporting they are making to the physical learning space to accommodate the students who are Deaf or Hard-of-Hearing? (iii) What specific visual teaching systems are the itinerant teachers reporting they are using in their literacy instruction to meet the learning needs of students who are Deaf or Hard-of-Hearing in the inclusive classroom?

This literature review examines critically the literature regarding (a) the relationship between hearing loss and low academic literacy performance and, (b) the specific visual teaching systems which may help support students who are Deaf and Hard-of-Hearing (DHH). Learning to read is an important skill for all students and does not naturally develop from environmental interaction like oral language does (Perfetti & Sandak, 2000). Research has indicated a relationship between phonemic awareness and phonological processing and reading ability (Kirby, Desrochers, Roth, & Lai, 2008). This review examines literature studying the development of these skills in students who are DHH.

The Alphabetic Principle

The alphabetic principle is the understanding that every letter sound has a corresponding written symbol (Ehri, 2005). According to the alphabetic principle, it is necessary to learn the letter-to-sound correspondence in order to read an alphabetic language (Ehri, 2005). Understanding the grapheme-phoneme relationship is the fundamental component of the alphabetic principle. This principle is necessary in alphabetic languages whose oral language does not directly or transparently transfer onto its orthography (Ehri, 2005). Instruction of the grapheme-phoneme correspondence needs to be taught directly and modeled to children as environmental print experience cannot yield the same concept (Ehri, 2005; Kirby et al., 2008). Understanding the alphabetic principle serves as the learning mechanism for a beginning reader. When confronted with an unfamiliar word, the reader with unaffected hearing can decode the letters using his or her stored phonemic awareness. This "self-teaching" theory (Juel & Minden-Cupp, 2000; & Share 2008) enables the reader to decode novel words.

For DHH students, the visual channel becomes an important information receptor. Whereas phonemic awareness is traditionally associated with a sound-letter correspondence, the visual channel may provide students access to the alphabetic code with specific visual teaching systems (Allen, Clark, del Giudice, & Koo, 2009). Focusing on the visual composition of words may help readers who are DHH in a manner similar to the sounding-out of words helps hearing readers in the early stages of literacy development.

Etiology of Deaf and Hard-of-Hearing

Given the various physiological factors which contribute to hearing loss and the

provincial model of inclusion, teachers can expect to instruct students who are DHH in their classrooms (Borders, Barnett, & Bauer, 2010; Ontario Ministry of Education, 2005). Dodd-Murphy and Mamlin (2002) estimated that 9% of a school population had some degree of hearing loss. This is a conservative estimate as some of the signs of being DHH, such as disruptive or inattentive classroom behaviour, may be misinterpreted or misdiagnosed as separate behavioural or psychological issues (Goldberg & McCormick Richburg, 2004; & Lieu, 2004). Medical complications occurring from early childhood illnesses, such as recurrent ear infections, may compromise the auditory channel (Goldberg & McCormick Richburg, 2004; Lieu, 2004). Ear infections can cause temporary hearing reduction and may lead to permanent hearing loss through scaring of the inner ear (Lieu, 2004). Further, sensory-neural hearing loss, or nerve deafness, may co-exist with a conductive hearing loss. This results from damage to the eardrum, membranes, and bones which act as a passage way for sound to travel from the external to the inner ear (Walker, Iadarola, & Allen, 2009). Neural hearing impairment, involving the brain and brainstem, is permanent.

Hearing loss may also be attributed to noise exposure, including personal listening devices and environmental noise pollution. Hearing loss, whether permanent or temporary, and occurring unilaterally or bilaterally, greatly impacts a student's ability to learn from audio-verbal (AV) instruction. Research has indicated a relationship between hearing loss and low literacy ability (Dodd-Murphy & Mamlin, 2002; Lieu, 2004; Woolsey, Satterfield, & Roberson, 2006). Depending on the type, severity, and frequency of their hearing loss, students may present underdeveloped phonemic awareness or phonological processing skills. Given the various causes and types of hearing loss,

teachers can expect to be instructing at least one student who is DHH in their classroom (Pakulski & Kadervek, 2002).

Academic Consequences for Students who are Deaf and Hard-of-Hearing

The inability to decode novel words prevents students from engaging with increasingly difficult texts. Traditional oral teaching approaches or a lack of visually-based phonics instruction in school increase the reading difficulty for students who are DHH. This physiological impairment and less-than effective educational instruction may result in poor academic outcomes. Dodd-Murphy and Mamlin (2002) found that children with minimal sensory-neural loss had a 37% grade retention rate in school. Woolsey et al. (2006) reiterated the connection between DHH and grade failure as children with hearing loss were at higher risk of failing high-stakes assessments.

Ehri's Reading Model

According to Ehri (2005) students decode words by phonemic awareness. Through learning the grapheme and phoneme representation, they learn the composition of words. This allows students to access the alphabetic knowledge that is essential to reading (Ehri, 2005). For children with normal hearing, access to this alphabetic code is acquired as they learn to map the sound onto the corresponding written letter. This alphabetic knowledge is fundamental to the student's development through the phases of reading which are "pre-alphabetic, partial, full, and consolidated alphabetic" (Ehri, p.167, 2005). The non-literate child at the pre-alphabetic phase will by the consolidated phase, have automatized alphabetic knowledge and be able to sight read (Ehri, 2005).

Initially, children are exposed to a variety of symbols which they equate with meaning. This logographic representation is not dependent upon phonetic components of

language and comprises the pre-alphabetic phase of Ehri's (2005) model. During this phase, students are reading "environmental print" (p.173) like their personal names or commercial advertisements. Beech (2005) reported this occurred during preschool years and similarly when learning a new orthography. Students, regardless of hearing ability, are equally equipped at this pre-alphabetic phase to interact with the symbols of their environment. The individual has a beginning framework to function, interpret, and interact with the symbols and meanings of their society. However, Ehri (2005) clarified that students at this phase are not engaged in the process of reading as they are "using cues that do not involve the alphabetic system" (p.173).

The difference for the DHH student who is DHH occurs at the partial and full alphabetic stage where he or she cannot access the relationship between the grapheme and phoneme. The working knowledge of the alphabetic system is not conveyed to the DHH student through AV communication. Instead, Allen, Clark, del Giudice, and Koo (2009) suggested the visual linguistic systems of Cued Speech (CS) and Visual Phonics (VP) may provide the DHH child access to the alphabetic principle.

While their hearing peers are going through Ehri's (2005) partial and full alphabetic phases, the student who is DHH may transition between the pre-alphabetic and consolidated alphabetic phases (Allen et al., 2009). Instead of relying upon an auditory and verbal approach, the specific visual teaching systems of CS and VP could provide access to these phases. These systems would require working memory to hold the visual cue of the letter and retrieve the phonetic symbol of the letter from long term memory (Narr, 2006). Focusing on the visual composition of words may help early DHH readers in a manner similar to the sounding-out of words can aid hearing readers in early stages

of literacy development.

Research Question One

  Instructional methods.

    Reading involves the visual processing of information. Unless there is a physical disability resulting in the need for Braille or audio processing of text, the visual medium is the primary receptor of information. Reading involves the visual decoding of orthographic symbols into a mental representation of that word (Fromkin, Hymans, & Hummel, 2006). This process is supported through instructional methods which use visual aids to directly teach decoding strategies. The specific visual teaching systems of Cued Speech (CS), Jolly Phonics (JP), and Visual Phonics (VP) provide additional methods to aid literacy instruction. This study was interested in determining how these supplemental instructional practices were being adapted or modified to support students who were DHH within an inclusive classroom.

    Instructional methods for an inclusive classroom with DHH students include both oral and visual components (Bennett, Dworet, & Weber, 2008). For DHH students, the visual information conveyed through the instructional methodology of the teacher is critical. As Hutchinson (2009) suggested, DHH students rely upon their visual environment to be active learners. While using visual aids during whole-group instruction will help all students supplement the AV signal, it is imperative for the learning of the student who is DHH (Luckner, Bowen, & Carter, 2001).

  Concrete visual materials.

    Visual materials that support AV communication may benefit the entire class (Luckner, Bowen, & Carter, 2001). Subsequently, Luckner et al. (2001) suggested

implementing visual aids like photographs, class itineraries, computers, movies with closed captions, providing instruction in ASL or LSQ in the classroom. Where processing of phonological information is limited due to hearing issues, the visual medium is crucial in creating connections between words and meaning (deVincentis, 2010). Visually displayed information is a necessary instructional accommodation for students who are DHH (Ontario Ministry of Education, 2005). Students who are DHH rely upon the visual information displayed in graphic organizers to support their learning and independence in an inclusive classroom (Hutchinson, 2009; Luckner et al., 2001). While Luckner et al. (2001) discussed the types of visual materials in an inclusive classroom, they did not describe the use of these materials instructionally by the teachers or strategically by the students to aid literacy development.

Research Question Two

Classroom acoustics and student learning.

There are both external and internal sources of noise in the classroom which affect the student's reception of oral instruction. According to Crandell and Smaldino (2000) external noise originates from a source outside of the classroom that can still be heard by the students within the classroom. For example, road construction or a parade may cause interruption in the audio signal. Internal building noise sources may also disrupt classroom acoustics. Crandell and Smaldino (2000) cite the air circulation systems as being a common source of classroom noise distraction. Finally, classrooms may also have internal noise sources that cause acoustical problems. These include conversations during small-group work and movement of furniture on the floor (Crandell & Smaldino, 2000). Consequently, teachers may need to consider the acoustical design of

their classroom to make it a more effective listening environment. Bradley (2007) suggested teachers try to reduce unwanted background noise by closing doors and windows. Further, carpeting or other sound reducing material would also help preserve the oral instructional signal and reduce unwanted background noise (Bradley, 2007).

Beyond sound amplification.

Amplification of sound is a typical method of improving instructional communication. Not all classroom settings, however, have permanent amplification systems. School financial restraints, system availability, or reluctance of teachers or students to use technological devices may limit access to an FM system (Lieu, 2004). Although no current Canadian data has been published that quantifies the number of anchored FM systems in use, once they are secured to the classroom they become stationary devices. In addition, increasing sound volume is not an effective strategy because clarity is lost with an increase in vowel energy which in turn causes a decrease in consonant energy (Pakulski & Kadervek, 2002).

Research Question Three

Specific visual teaching systems.

The use of physical gestures to convey phonological information is not a novel method of instruction. Both the alphabetic linguistic systems of the German and French languages have a manual system of representing phonological information. The Phonemetransmitting Manual System (PMS) combines both a visual and physical element to convey either phonetic or phonological information to be transferred in the German system (Klaus, 1978). In the French system, Methode Gestuelle Borel Maisonny, a similar method of hand and arm movements is employed to represent phoneme and

phonological information. The French system was created in 1949 before Cued Speech, Jolly Phonics, or Visual Phonics. PMS and Methode Gestuelle Borel Maisonny do not use a written symbol in their programs to represent linguistic information. It is beyond the scope of this study to provide a thorough examination of the German and French programs as articles regarding these programs in English are limited. Their reference in this study is to provide the reader with knowledge of specific visual teaching systems which predate the English systems reviewed in the study. The concept of visually transferring oral based information is not unique.

The quality and types of visual systems vary in their ability to convey linguistic information for DHH students. Research by Perfetti and Sandak (2000) reported that people who are DHH use phonologically based reading strategies, but to a lesser degree than their peers with normal hearing. Perfetti and Sandak (2000) questioned whether readers who are DHH were visually encoding phonological information as an alternative linguistic method. Consequently, other researchers have also examined the utility of visually-based phonemic and phonological instructional systems of CS, JP, or VP. In addition, contemporary research has examined the contributions of manual languages to the development of reading ability in DHH children. Visual encoding systems present phonological information using a multi-sensory strategy.

American Sign Language (ASL) and Langue des Signes Québécoise (LSQ).

The term Deaf will refer to the inability of an individual to process auditory signals. Deafness as a cultural definition is not discussed in this study. The visual communication method of ASL and LSQ is a full language system. Accordingly, ASL and LSQ have grammar and syntax similar to verbal languages (Fromkin, 2006). People

who are Deaf may communicate using manual signs which visually represent individual

letters (finger-spelling), words, and ultimately, complete sentences. ASL and LSQ do not

directly translate spoken languages and ASL does not directly map onto the orthography

of English. Consequently, students whose first language is ASL must learn two distinct

language systems.

Finger-spelling.

The relationship between reading skill development and ASL is not fully

understood. Padden and Ramsey (1998) analyzed components of ASL which may support

a visual reading strategy for the Deaf reader. In ASL, finger-spelling is a common

phenomenon with approximately 15% (Padden & Ramsey, p.34, 1998) of conversational

words being finger-spelled. Although finger-spelling does not represent the phonetic

composition of a word, it does transfer its orthographic information. This is particularly

helpful for regular words. Padden and Ramsey (1998) found Deaf children recognized

and reproduced manually spelled words before they could read. This orthographic

exposure helped to create an awareness of letters and words. This method is not

phonologically rooted and, consequently, is different from the model of hearing children

would be exposed to and later develop.

According to Akamatsu (as cited in Padden & Ramsey, 1998) children initially

identified finger-spelled words as whole words and not as individual letters. Children did

not see the handshape as representing separate letters of the word. Later, children learned

to discriminate the word from the letters. As the children were asked to write the words

they saw finger-spelled, it became apparent that knowledge of the written language was

also involved in this process (Padden & Ramsey, 1998). This cognitive complexity is not

fully understood and research still needs to map the connections between finger-spelling, reading, and writing.

To test the relationship among ASL, finger-spelling, and word recognition, Padden and Ramsey (1998) examined 31 Deaf children. The children were from Grade from 4 to 8, with both males and females, and all were profoundly Deaf. The children were educated using a bi-modal approach with ASL and oral communication. Deaf students who excelled at a finger-spelling test also attained better grades on their SAT-HI (the SAT for hearing impaired students), reading comprehension tests; irrespective of parental hearing ability ($r = 0.43$, $p < 0.01$) (Padden & Ramsey, 1998). Some of the participants in the Padden and Ramsey (1998) study were exposed later in life to ASL due to arriving as immigrants and accessing education in ASL. What is not presented is the functioning of this relationship among finger-spelling, word recognition, and reading.

Lip-reading.

Wang, Trezek, Luckner, and Paul, (2008) stated that speech-reading provided an alternate visual route for accessing phonetic information. Wang et al. (2008) argued that since DHH students were educated within inclusive classrooms they were being exposed to spoken culture. Within this learning situation, Wang et al. (2008) suggested these students would develop the ability to read lips with enough skill to read texts at age appropriate ability. However, upon further research examination, solely relying upon this method proved to be problematic (Fromkin, 2006; Leybaert & Lechat, 2001; Wang, Trezek, Luckner, & Paul, 2008).

Students who are DHH may learn to interpret mouth movements to correspond with particular words or sounds. However, it is not an effective instructional strategy as

seventy-five percent of English words can be misinterpreted (Fromkin, 2006). This inaccuracy is due to the invisibility of some phonemes on the lips and different phonemes producing similar mouth movements (Leybaert & Lechat, 2001; Wang et al., 2008). Consequently, educators cannot rely upon lip-reading as a primary instructional method.

Cued speech.

Cued Speech is a multi-modal system created in 1964 by Orin Cornett to provide a way for people who are Deaf to interact with language more phonetically than either sign languages or finger-spelling could permit. CS is not a recognized sign language like ASL and LSQ. Instead, it provides a visual representation of oral language at its phonetic level. CS provides a concrete graphic image that allows the individual to associate a phoneme to a gesture. In this way, the person is provided with 8 hand shapes (consonant sounds) and 4 mouth positions (vowel sounds) to correspond with each of the 45 English phonemes (Narr, 2006). CS creates a visual relationship with the orthography of English. There are no written symbols in CS. CS provides a stable and graphic representation of the phonemic units of a word. As Allen et al. (2009), clarified the manual gestures of CS do not symbolize any other linguistic characteristics of oral languages. Research by Narr (2006) and Allen et al. (2009) suggested CS can help students who are DHH develop phonological abilities similar to their peers with unaffected hearing, by aiding in overall language development and subsequently, phonological skills.

Jolly phonics.

Originating in the United Kingdom, this phonics program explicitly teaches 42 phonemes of English (Ager & Solli, 2009). Phonemic information is presented orally, visually, and with kinesthetic gestures (Jolly, 2000). Flash cards and other visual aids use

different type-sets to present orthographically similar letter combinations. This may aid in the development of phonemic awareness as students learn to discriminate the different phonemes and orthographic information. It is expected the student will rely less on the visual cue of the type-set and will independently decode the orthography of a word. Students are taught the sound-letter relationship before the letter-name recognition (Ager & Solli, 2009). The English Spelling Society encourages external research on the JP program and makes the findings available upon request and on its website. This may help explain the growth of the program to its current usage in 22 percent of Canadian elementary schools (Jolly, 2000).

JP focuses on developing the following five skills: (i) ability to identify the 42 primary letter sounds, (ii) learn how to write letters, (iii) sound blending, (iv) letter segmentation, and (v) distinguishing irregular orthography (Vinden, Rowsell, Wernham, & Lloyd, 2012). These skills build upon each other to develop the literacy ability of students. Students are taught these skills through a multi-modal approach combining articulation, visuals, and physical gestures. Phonemes are taught in a categorical order that is not alphabetical, based upon phoneme frequency (Vinden et al., 2012). The letter sounds are presented with a visual cue card and physical gesture. The letter cue cards have raised surfaces which allow students to trace the letter shape, adding a kinesthetic component to their phonetic learning. This specific visual teaching system was designed to be used in the general classroom during whole-group or small-group instruction.

Although research regarding JP and DHH students has yet to be published, other research indicates JP does aid literacy development for other at-risk students, such as English Language Learners (ELL). Ekpo, Udosen, Afangideh, Ekukinam, and Ikorok

(2007) also reported JP aided the phonics and phonological development of ELL

students. Using an independent sample *t*-test, Ekpo et al. (2007) determined students who

received JP instruction benefitted from the reading program. Ekpo et al. (2007) concluded

this after conducting an independent sample *t*-test ($p < 0.05$) on the post-test mean results

of the control and experimental groups. Ekpo et al. (2007) stated the instructional

approach of JP made the students interested in literacy concepts being taught. Perhaps the

explicit teaching techniques which make phonics accessible to ELL students will aid

students who are DHH.

Visual phonics.

Visual Phonics is not a mode of communication. While it uses hand-cues, it does

not conform to other conventions of manual languages, such as grammar or syntax.

Instead, VP is a supportive educational resource for educators to teach an understanding

of the alphabet and phoneme awareness (Woolsey, Satterfield, & Roberson, 2006). Since

VP represents letter sounds through written and visual cues, it is transferable to any

alphabetic language. A teacher-created resource sample is found in Figure 1. According

to Trezek and Wang (2006), it is not necessary to hear the corresponding sounds of the

letters but only to understand that phonemes are the basic units of an alphabetic language.

During instruction, the child is encouraged to lip-read or speech-read and is

encouraged to pronounce the word with the teacher. Narr (2006) stated this articulatory

feedback loop helped to encode the phoneme information into long term memory. The

additional symbols, presented during the lesson, were meant to represent the sounds of

the phonemes and are written with the picture they represent. This additional symbol is a

unique feature that separates VP from any other specific visual teaching system discussed

in this review. Sometimes the letter that the VP symbol denotes is not presented with the picture. This creates a potential problem for beginning readers. Students who are DHH are required to learn to read an orthographic language that does not map onto ASL and with VP; they are asked to decode symbols for phonemes they cannot hear. The visual representation between the VP symbol and alphabetic symbol may not be clear to the student. It is not clear what instructional, linguistic, or learning benefit these graphic symbols add to the program.

Unlike JP, assessing the program is difficult. Locating studies of the program before its commercial launch were unsuccessful for this thesis. Resources and training materials can only be obtained after completing a teacher training program. Currently, the program is only offered in two locations in the United States and one location in Canada. This makes accessing the program difficult for interested professionals and home support people. In addition, since teachers create their own resources to support their classrooms it is problematic to replicate conditions and resources in research models. As such, the decoding of words into their phonemes using VP has not been empirically explained through scientific study (Narr, 2006).
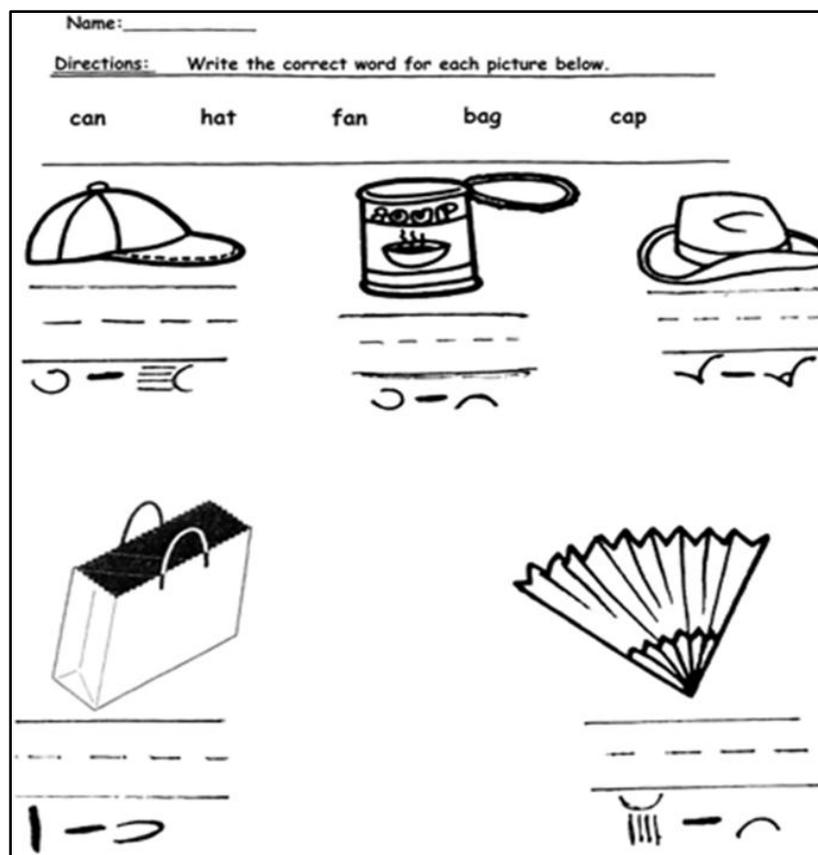
Figure 1. Teacher Produced Activity for Visual Phonics. Adapted from "Phonological Awareness and Decoding in Deaf/Hard-of-Hearing Students Who Use Visual Phonics," by R. Narr, 2008, Journal of Deaf Studies and Deaf Education, 13, p.410. Copyright 2008 by Oxford Journals.

Narr and Cawthon (2010) conducted a survey of 200 educators who had implemented the VP program to determine their experiences with VP. Of the participants, 123 said they used VP to teach phonemic awareness. The teachers also noted the instructional ease of the program and they agreed strongly that it engaged students (Narr & Cawthon, 2010). Narr and Cawthon (2010) reported in their survey that only 40% used the written symbols of VP as the symbols complicated the learning process for students. Consequently, this suggests future research should investigate if the physical gestures of VP are the more important aspect of the program.

Cain (2010) suggested pre-readers may learn to connect a visual cue with a

certain word and this is not an "alphabetic strategy." This problematic situation is demonstrated in a study by Gough, Juel, Griffith, Ehri, and Treiman (1992). The researchers taught a group of five year old pre-readers to read using flash cards. Using a thumbprint as a visual cue, one flash card was marked. Over half of the students correctly identified the flash card with the thumbprint, having associated the thumbprint and not the grapheme with the meaning (Gough et al., 1992). Having not encoded the alphabetic information, the students did not read the card without the visual cue. Teachers should be cautious of what their students are encoding when their instructional approaches employ additional visual coding strategies.

Discussion

Research has moved beyond questioning whether students who are DHH should learn phonemic awareness and phonological processing to help to support them in acquiring this traditionally oral and aurally transmitted code. Students need to develop literacy skills to read increasingly difficult texts. Through explicit instruction, involving visual strategies, DHH students may proficiently engage with written texts. Through examining the current literature, a multi-modal approach appears best suited to meet the needs of students who are DHH within an inclusive classroom.

Juel and Minden-Cupp (2000) studied the instructional methods for phonemic awareness and phonological processing in four Grade 1 classrooms over a year using a multi-methods approach. Juel and Minden-Cupp (2000) were interested in researching the relationship between differential instructional practices and materials used by the students and modeled strategies to increased reading ability. The researchers argued students would need to analyze a word at the phoneme level before working with rime

analogies. Juel and Minden-Cupp (2000) focussed instead on the nature of the instruction.

From weekly classrooms observations of language arts lessons, Juel and Minden-Cupp (2000) developed the following codes: "activities, materials, strategies, and linguistic units" (p.467). Juel and Minden-Cupp (2010) conducted inter-rater reliability on the codes to achieve a correlation of .97 (p.467). These codes were later developed with individualized detail according to what each classroom was using in its literacy program. Observations were conducted during whole and small group instruction and these were not sub-coded as separate data sets. Instead, each student was coded to follow his or her reading progress and personal experience throughout the school year.

Since the school district did not have a formal reading assessment of the students, Juel and Minden-Cupp (2000) used classroom observations and student language arts portfolios to pre-assess the children. Subsequently, the students remained in their classrooms but were categorized into three reading groups: high, medium, and low. Juel and Minden-Cupp (2000) used these groups to categorize the empirical data they collected through classroom observations, student-produced written narratives, and literacy test scores. Juel and Minden-Cupp (2000) administered the Book Buddies Early Literacy Screening (BBELS) to each student three times during the academic year. The BBELS assessment assesses word recognition and comprehension. Included in the word recognition task was a phonemic awareness skill test as well. The researchers also administered the Wide Range Achievement Test-Third Edition (WRAT3) individually to students three times a year. The last two test sessions presented the students with previously taught sight words and new words. Juel and Minden-Cupp (2000) wanted to determine if the students had learned the decoding strategies and words the teachers had

modeled during direct instruction.

Juel and Minden-Cupp (2000) found two significant outcomes. First, the study revealed that students attempted to use the methods modeled by their teachers. Students would apply the strategies their teacher modeled for them during whole-group or small-group lesson. For instance, through direct and consistent instruction, struggling readers began to apply the letter-sound principle independently (p.481). Second, students who did not receive this explicit and consistent modeled instruction were not able to blend sounds or employ the letter-sound strategy as independently (Juel & Minden-Cupp, 2000). A more detailed description of the explicit application of the visual strategy is found in Williams (2004).

Williams (2004) reviewed material which supported the explicit multi-modal instructional approach of primary-junior educators of students who were Deaf. Using storybooks for read-alouds and shared reading, the teachers explicitly modeled phonological decoding skills. Teachers demonstrated corresponding manual signs with words found in the text. Finger-spelling of the words was also demonstrated. Picture signs were also placed in the story book to help the children decode words while finger-spelling further aided in word deconstruction. As suggested by Akamatsu (as cited in Padden & Ramsey, 1998), finger-spelling would aid in the understanding of the orthography of English.

The use of Visual Phonics (VP) in developing reading skills in DHH children was explored in the 2006 study by Trezek and Wang. Using a mixed methods design, they studied the effectiveness of VP for improving test scores in DHH students in three areas: word reading, decoding pseudonyms, and reading comprehension. The study provided

Kindergarten and Grade 1 students with one academic year of a VP supported literacy based reading program. Using a convenience sampling method, students were assigned to three cohorts determined by their classroom assignment. The study took place within a self-contained program for DHH students. The teachers used an explicit style of instruction based upon Reading Mastery I and supplemental VP techniques. The written symbols of the VP system were not used in this intervention study; therefore, only the hand gestures were included.

Kindergarten students were assessed only with the Word Reading subtest. Grade 1 students were tested in all three areas of pseudo word decoding, word reading, and reading comprehension using the Wechsler Individual Achievement Test II. Teachers instructed and implemented the assessments using signed and verbal language along with VP cues. The results were analyzed using a paired-sample *t*-test (two-tailed) to determine the difference between pre-post test results. The analysis results presented significant findings for the word reading section of the study. Further results discussed in the paper supported Trezek and Wang's (2006) research hypothesis that VP does help DHH students with develop phonemic awareness and phonological processing.

The qualitative aspect of the study involved the teachers recording their observations of their students in a log book. Teachers also participated in informal interviews during the study. Teachers modeled a decoding strategy which involved saying and signing a presented word. DHH students were observed using the explicitly taught techniques of the Reading Mastery I program. The teachers subsequently documented that students benefited from attempting to pronounce or speak newly presented words. This reinforcement of the auditory and kinesthetic feedback loop

strengthened their prior learning. While the study population was small (*N* =13), the results were promising.

The phonetic decoding skills of primary age DHH children were further explored in Narr's (2008) research. Narr (2008) used a mixed methods research design to study children between Kindergarten and Grade 3 who received instruction in ASL, supported with VP cues. Students of various ethnic backgrounds and hearing abilities were represented in the study. In Narr's (2008) study, the teachers also used VP in their language instruction. Unlike the teachers in Trezek and Wang's (2006) study, these educators also used the written symbols of the VP system (Narr, 2008). The children did not transfer the writing symbols to their own creative writing. The students learned to distinguish the corresponding sound-symbol and later the sound-letter representation relationship. This indicated the students understood the symbols were a tool to decode the sound of the letters and the symbols were not needed to write words they could already read. Students also frequently vocalized during word decoding tasks, suggesting they were utilizing the articulatory feedback loop. Narr's (2008) research therefore echoes the kinesthetic findings of Trezek and Wang's 2006 study. Again, research illustrated the kinesthetic cue could reinforce the learning of phonemic awareness and phonological processing skills of DHH children.

The quantitative portion of Narr's (2008) study involved a picture rhyme task with 40 test items, divided into two sets. One set consisted of 20 orthographically similar items (pear and bear) and the other set consisted of 20 orthographically dissimilar words (light and kite). There were two types of distracters: 23 shared phonological characteristics with the target rhyme (top and ten) and 17 shared no features with the

target rhyme (dust and leap). The total amount of correct responses was treated as the

independent variable. To decode the word, students were presented with pictures labeled

with VP symbols, but not the pseudomophones spelled according to phonetics. The

researcher and a graduate student observed the teacher delivering the test. The decoding

task was similar to the above mentioned phonological task. Consequently, the results on

both tests similarly supported Narr's (2008) research hypothesis that VP-supported

reading lessons would help DHH students develop phonological decoding abilities by

strengthening phonetic awareness. Narr's (2008) study provided additional evidence that

the auditory signal may be compensated for or supported through the visual channel. In

essence, Narr (2008) contended:

> students typically gain information about the phonological code....through varying
>
> amounts of residual hearing, speech reading cue, and participation in speech
>
> therapy. However, none of these avenues provides complete access to the
>
> phonological code. VP addresses this dilemma via the visual, tactile, and
>
> kinesthetic input related to the phonemic structure of words. (p.414)

Although Narr's (2008) study involved a small sample size ($N =10$) the results did

support the findings of Trezek and Wang (2006). The limitations of both studies were

similar in regard to their small sample sizes.

   The VP program does not seem to offer a new instructional methodology. Using

lip-speech reading as a visual aid is not unique to VP. The limitations of lip-speech

reading have been addressed previously in this review. Also, the picture symbols did not

correspond to a phonemic-orthographic relationship. Instead, the VP symbols added

another cognitive barrier to decoding. Since the symbols were not essential to the VP

program, their importance was questionable. Relying upon VP as a phonemic and phonological strategy was problematic as the system was not useful for all the phonological levels. This system aided phonological processing at the phoneme level but was not transferable to the morpheme level (Wade-Woolley, 2010). Whether VP provides better access to the alphabetic principle than other specific visual programs has yet to be empirically determined.

Cihon, Gardner, Morrison, and Paul (2008) examined VP as an intervention strategy for DHH Kindergarten students. Citing previous work by Narr (2008) and by Trezek and Wang (2006), Cihon et al. (2008) sought to quantitatively add to the academic research surrounding VP as an effective intervention instructional strategy. Cihon et al. (2008) stressed reading programs should comprise the following elements of instructional design: explicit direction and repetitive student practice in phonics, text comprehension, phonemic awareness, and fluency. Teachers ought to assess student learning continually and modify their instruction accordingly.

Through this pedagogical framework, Cihon et al. (2008) studied a small sample ($N =5$) of Kindergarten children within an integrated classroom for 11 weeks. All the children had some residual hearing. The children received intensive small group and individual sessions. Regular classroom instruction on a targeted phoneme lasted approximately 2 hours a day which consisted of introducing a target sound through flash cards, songs, writing the letter, saying the letter, and imitating the teacher-modeled VP gesture for the letter-sound.

The intervention occurred 3 separate times by either the classroom teacher or by Cihon for an additional 10-12 minutes with two to four pupils. The phonemes to be

targeted during the intervention were determined by a baseline test measure using the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). DIBELS is a literacy assessment tool for teachers to determine the reading ability of their student (Cihon et al., 2008). The teacher was provided with lesson plans and scripted words to say to help direct the children to pronounce the phoneme. These sessions would focus on letter-sound correspondence and letter-blending. Cihon et al. (2008) administered both a pre and post-test to access the effectiveness of intervention. Data was collected by three individuals who were trained in the VP program.

All participants showed growth with the VP intervention with a direct increase with the number of words correctly identified. For example, a participant correctly identified fifty out of fifty-five letter-sounds taught to her through VP. This contrasted her score of six out of thirty-seven correctly identified letter-sounds taught through general classroom instruction not using the VP program. The improvement in scores could also be the result of more direct instruction. The post-test was also administered shortly after the intervention. This left little time to determine if the intervention had long-lasting effects. Cihon et al. (2008) stated the strength of the VP program was it maintained student interest in the phonemic or phonological lesson of instruction. However, this should not be the primary strength of any intervention program. The results of the intervention supported findings by Narr (2008) and by Trezek and Wang (2006). The students in Cihon et al. (2008) received early intervention and were actively engaged in lesson material.

Trezek, Gampp, Wang, Paul, and Woods (2007) proposed the strength of VP lay in its instructional approach for teachers. With one hand movement representing one

phoneme, VP removes obscurities inherent with speech-reading (Trezek et al., 2007).

Teachers reported they used VP as a collaborative tool with their students during lessons.

In this study, teachers reported using finger-spelling in addition to the VP program. This

caused a validity issue for the study as finger-spelling is not officially part of the VP

program. It could be that the finger-spelling was the valuable component in the teacher-

directed instruction which influenced the participants. Trezek et al. (2007) reported the

teachers found the VP useful in developing literacy lessons to teach the phonemic

awareness. However, this ability does not need to be a component exclusive to the VP

program.

Donne and Zigmond (2008) provided a detailed exploratory mixed-method

observational study of reading instruction for DHH students. The researchers observed

students between Grades 1 and 4 in mainstream classrooms, special resource classrooms,

and alternative learning spaces for the Deaf in different schools. Donne and Zigmond

(2008) were interested in exploring the characteristics of the reading programs within

these settings. The quantitative portion of their study required observed behaviour to be

coded for statistical analysis. Donne and Zigmond (2008) coded their observations into

three main sets: academic responding, task management, and competing response. Inter-

rater reliability was provided by one researcher staying on site to code observations in the

presence of a second researcher.

Data was recorded before and after the timed observation sampling. In addition,

teachers were informally interviewed to ascertain their educational qualifications and

professional experience. Student records were also reviewed to provide demographic

information. This descriptive information helped to authenticate the setting and explain

the reading strategies being studied. The sample size was considerably larger than the

Trezek et al. (2007) and Chinon et al. (2008) studies: 24 students across nine public

schools participated in the study. Students received visual/aural instruction, with ASL

supporting the curriculum.

The results of the study are of particular interest. Literacy instruction was

provided by both the general classroom teacher and a DHH teacher. The reading

curriculum was supported by a variety of instructional materials. The codes were

interpreted with a one-way ANOVA and independent sample t-tests. Students with a mild

to moderate hearing loss spent more time receiving literacy instruction through whole-

group, teacher led instruction than students with more profound hearing loss ($p = .033$).

This suggested a need based service delivery model. Also, Grade 3 students received

more instructional time with a DHH teacher than the Grade 2 students ($p = .029$). The

ANOVA also revealed that the Grade 3 students were receiving more nonverbal prompts

during instruction then the Grade 2 students ($p = .026$). Results also found that as

students improved in their reading ability, support from the DHH teacher was reduced ($p = .047$). This allowed the DHH teacher to focus on the students who could most benefit

from the instruction intervention.

The findings indicated the time provided for reading instruction was often not

solely utilized for reading activities. The most frequent instructional setting was whole

group learning, with teacher-directed learning. Consequently, the students' main task was

to listen to teacher-focussed instruction which contradicted educational research which

suggested student learning was most effective in small group situations or in pairs

(Donne & Zigmond, 2008). The researchers argued that the teachers did not lack phonetic

instructional materials or curriculum. Instead, there was a lack of instructional time allocated to teaching phonological processing; on average only 4 students a day were instructed in these linguistic skills for 7.4 minutes. The gap between the research findings and educational instruction was puzzling. Why were the teachers in this study, and perhaps elsewhere, not including more time to phonological processing activities in their instructional practice? Donne and Zigmond (2008) found teachers reported a lack of educational training and perceived ability to teach phonological processing. Also, some teachers may have the concept that phonological instruction may not benefit students who are DHH.

The researchers suggested future studies should explore the relationship between teacher attitudes and instructional practice. This study emphasized that DHH students need time to learn phonics through explicit instruction. The students in their research received instruction from only their classroom teacher without the aid of any educational support from speech and language pathologists or reading specialists. The classroom teacher could dedicate more time to teaching literacy explicitly. This is of particular interest in directing and designing future research studies. Based upon the literature reviewed in this study it is apparent there are a variety of specific visual teaching systems. However, data is not available that provides information on the usage of these programs in Canadian classrooms. From the literature presented in this review, the use of specific visual teaching systems seems to be reserved for specific populations of students or research purposes. Although JP and VP could benefit students in the general classroom, it does not appear teachers are adapting their instruction to meet the needs of DHH students in an inclusive classroom. As such, it seems specific visual teaching

systems and environmental adaptations generally remain educational accommodations for specialized instruction.

Conclusion

The direct instructional approach described in the Williams' (2004) study provided a concrete example of how educators can use visual strategies in teaching phonemic awareness and phonological processing to DHH students. Although the visual systems vary in methodology, all support the DHH reader in developing phonetic skills. Time appears to be the crucial element in acquiring literacy skills. Without sufficient time to practice the skills learned during instruction, the student cannot internalize decoding strategies. The expertise, knowledge, and experience the teachers bring to their students create the learning environment. Teachers can provide DHH students access to decoding strategies through specific visual teaching systems designed to teach phonemic awareness and phonological processing skills.

Significance of Proposed Study

This study examined self-reported itinerant teachers data which described their experience supporting students who were DHH in developing phonemic awareness and phonological processing skills. This in-depth inquiry into instructional methods will help further understanding of how to aid DHH students (Borders, Barnett, & Bauer, 2010). The ability of the teacher to engage learners of diverse needs is paramount in an inclusive educational setting. Ultimately, I hope the findings of this study will aid in the creation of pre-service teacher courses in language instruction for DHH students (Bennett, Dworet, & Weber, 2008). It is anticipated other educators will read this study and learn new strategies

or techniques which may encourage the use of environmental adaptations and specific

visual teaching systems into their instructional practice.

Chapter 3. Methodology

Rationale for a Qualitative Approach

The purpose of the study centred upon the individualized experience of the participants. To help distinguish categories and answer the research questions a descriptive methodology was utilized (Yin, 2003). Consequently, the research questions contained in this thesis sought to describe the experiences of the participants involved in the study.

A qualitative approach was necessary to best explore the experience of itinerant teachers supporting Deaf and Hard-of-Hearing students develop literacy skills within inclusive classroom settings. The purpose of this study was to explore the experience of itinerant teachers supporting students who are Deaf or Hard-of-Hearing develop literacy skills within inclusive classroom settings. Relying on self-reported data, the following questions examined the experiences of the participants and how they accommodated students who are Deaf or Hard-of-Hearing to acquire phonemic awareness and phonological processing skills: (i) How are the resources and instruction modified to meet the specific needs of the students who are Deaf or Hard-of-Hearing within the inclusive classroom? (ii) What environmental adaptations are the itinerant teachers reporting they are making to the physical learning space to accommodate the students who are Deaf or Hard-of-Hearing? (iii) What specific visual teaching systems are the itinerant teachers reporting they are using in their literacy instruction to meet the learning needs of students who are Deaf or Hard-of-Hearing in the inclusive classroom?

Role of Researcher

   During this qualitative study, I conducted participant-driven semi-structured

interviews. The interviews provided a forum for the participants to describe their

linguistic instructional techniques, visual cueing systems, use of amplification systems,

and interactions with other staff. Using categories arising from Education for All (2005),

questions explored how the participants accommodated for Deaf and Hard-of-Hearing

(DHH) students in their instruction and in the classroom environment (p.118). Education

for All (2005) provides research proven instructional strategies a classroom teacher can

implement to support students to develop phonemic awareness and phonological

processing skills. The instructional strategies would aid DHH students and would also

benefit students with learning disabilities (Ontario Ministry of Education, 2005). In

addition, the interview asked participants to describe what events, challenges, and

occurrences led to their decision to return for more education in the specific field of Deaf

education. The interviews focussed on their experiences teaching DHH students

phonemic awareness and phonological processing skills.

Sampling Procedures

   Participant selection.

   Three Eastern Ontario School Boards were individually contacted and their

respective ethical applications completed. Following ethical clearance, Letters of

Information and Consent Forms were simultaneously sent to the principals of select

schools within these boards using a scripted recruitment email. These are located in the

Appendix B and Appendix C of the thesis manuscript. Follow-up emails and telephone

conversations occurred with interested principals. Participants were then recruited

through principal referrals. All potential teacher participants were certified teachers with the Ontario College of Teachers at the time of the study. One principal forwarded the information about the study to one participant who was recruited in this manner. A second participant was recruited by being present during the first interview. A third participant was referred to the study by another participant who was also a co-worker. Finally, another board granted me permission to contact teachers directly and this method secured a fourth participant for the study. Criteria for participation did not include any personal identifying features such as gender, age, ethnicity, religion, class, sexual orientation, or any personal affiliations. The four participants were all female itinerant teachers who worked with DHH students with varying degrees of hearing loss. English was the primary instructional language. Student support occurred mainly through an intervention mode of instruction which involved the participants providing educational services to students in an alternative learning space.

Description of participants.

Pseudonyms have been used to protect the identity of participants and schools. Locations have also been protected in a similar manner. The participants in this study were Amelia, Bonnie, Colleen, and Donna. All have experience working with students, educational support staff, and administration at the various grade divisions. Also, the participants were all itinerant teachers with experience in the field of DHH education. At the time of data collection, the participants directly supported or monitored students with various degrees of hearing loss, language abilities, and cognitive functioning. Participants reported supporting between 19 and 68 students within the boards involved in the study. On average, they saw 13 students a week for individualized instruction or progress

monitoring. All the participants held basic teaching qualifications and certification with the Ontario College of Teachers for the primary and junior division. However, the participants were trained to support students in all divisions and with all levels of hearing loss. The participants received their additional qualifications from different post-graduate certification programs.

The participants did not report having a hearing loss of their own prior to their teaching certification, post-graduate certification, or being raised in a Deaf home. Only one participant, Donna, expressed a personal connection to hearing loss with her choice of pursuing her specialization in Deaf education (Donna, p.1). The other participants had teaching experiences that led them to this specialization. These programs had different emphases on teaching methods which would later influence the participants' instructional strategies.

Both Amelia and Colleen attended on-campus post-graduate teaching programs. They did so at separate times and at different educational institutions. As hearing students, Amelia and Colleen reported they learned American Sign Language (ASL) as part of understanding Deaf culture and to communicate with Deaf students. Amelia used the term "Deaf Power" (personal communication, November, 16, 2011) to describe the learning environment she experienced in her post-graduate program. Amelia defined this "Deaf Power" to be a positive reinforcement of Deaf culture, Deaf role models, and learning ASL (CJ, November, 16, 2011). This is similar to Colleen's experience who also reported learning about "bi-cultural, bi-lingual" (Colleen, p.2) during her Deaf education specialization. Consequently, Colleen was required to learn ASL concurrently with auditory and verbal therapy and speech therapy (Colleen, p.2).

Donna completed an online Deaf education qualification which required her to choose an instructional methodology based on either audio and verbal therapy or ASL. The online specialization had three levels and ASL was offered as a component of the third level. Donna completed the first two levels and as part of a research assignment she "observed ASL in action" (Donna, p.2). Donna did not report having training in ASL to communicate or as an instructional methodology.

Bonnie reported field experience as being her main source of knowledge in learning how to support DHH students (Bonnie, p.2). Bonnie was responsible for accommodating a DHH child during her first year of teaching without any direct service support (Bonnie, p.10). Bonnie reported this was a common experience as she also stated the need to gather resources on her own: "if they [the student] had any kind of hearing impairment we didn't have…a specialist come in. We just had to gain information on our own" (Bonnie, p.4). Later, Bonnie taught students in a segregated setting. Bonnie reported being comfortable using ASL, Total Communication, and auditory and verbal therapy to support her students (Bonnie, p.4). Bonnie did complete additional special education qualifications and has taught students of various needs and abilities.

Data Collection

Semi-structured interview.

Self-reported teacher data, collected during an individual, semi-structured interview was the data source of the present study. The individual interview questions are located in Appendix D of the thesis manuscript. The interview allowed for direct data collection strategy and for the participant to describe in detail her experience as an educator of DHH students. During the interview, a digital recording device was used to

record the conversation. The semi-structured interview lasted for approximately 45 minutes.

Data collection specifics.

Each participant initially received an electronic copy of the Letter of Information (LOI) (Appendix A) and the Consent Form (CF) (Appendix B) before our interview. I explained they would receive a paper copy at the interview but this would allow them time to review the documents and ask questions if they chose. Two participants contacted me via my home telephone to address several questions regarding the study. Their primary concerns regarded confidentiality and the data collection procedure. I explained how their identity would be protected and what data I was trying to collect.

Two of the interviews were held in school offices, while no students were present. One interview was held at a private location. During one interview two participants were present. All data was collected during November and December 2011. Attempts to engage the participants for a second interview were unsuccessful due to their schedules. However, they were available to answer or clarify individual questions if necessary through electronic communication.

Data Management and Analysis

The participants' language and how they describe their instructional practices and their teaching resources became my data to be analyzed. Once the interviews were transcribed I began to undertake a comparative analysis of the data (McMillan & Schumacher, 2010). First, each interview was treated as a separate data set. Through the process of constant comparison, the data was re-examined and meanings began to emerge from the data. Categories then surfaced from re-visitation and coding of the data

segments. Based upon these categories, sub-categories presented themselves in the data (McMillan & Schumacher, 2010). Glaser and Strauss referred to this process as induction (as cited by Luckerhoff & Guillemette, 2011) as the overarching ideas emerge from the data. Then, interviews were compared to determine if there were shared categories or experiences between participants. Codes for categories and subcategories were then used to analyze all interviews.

Additional categories and subcategories emerged after the initial coding process produced nine categories. Needing to better analyze the data, I employed a method similar to Doll's (2009) recursion technique. Plouffe (as cited by Luckerhoff & Guillemette, 2011) referred to this as the "helical path" where I examined the data and then referred to a previous data segment. This was helpful due to the limited number of participants and research time. Data was categorized based upon the similarity among emergent codes. The number of codes representing a category was not consistent across all categories.

The main data source was semi-structured interviews of self-reported teacher data. Additional communication with participants occurred through email and member checking of the data also occurred through email. Non-recorded personal communication with the participants was written and stored in the Creative Journal (CJ). Electronic correspondence with the participants was downloaded and treated in the same manner as the rest of the data set. The abbreviations used to identify the data sources in this thesis are listed in Table 1. For example, data from linguistic teaching manual are coded LTM, whereas data from interview one, with Bonnie, is listed as Bonnie.

Table 1

Abbreviations for Data Sources

Data Source	Abbreviations
Amelia Interview 1	Amelia
Bonnie Interview 1	Bonnie
Connie Interview 2	Colleen
Donna Interview 3	Donna
Creative Journal	CJ
Amelia Email	AE
Bonnie Email	BE
Colleen Email	CE
Donna Email	DE

Context for the Study's Participants

A brief description of the setting of the study will enable the reader to better understand the experiences of the participants that are presented in the findings. All the participants were required to travel to assess, monitor, and instruct students with varying degrees of hearing loss. None of the participants reported supporting students who were profoundly Deaf. All the participants reported working within an auditory and verbal instructional method. Within the geographical area of Eastern Ontario, there existed socio-economic and cultural diversity among the students the participants supported. There were urban populations with newer school buildings and equipment, and schools in lower socio-economic areas. Some schools were located in rural areas and among

farming communities. The participants tried to meet with 13 students a week for approximately forty minutes of instructional time. Students were provided with supplementary literacy instruction in a space separate from the classroom. The participants also reported providing in-service to other teachers and support staff about the needs of students with hearing loss. Participants reported supporting students from all school divisions with various ranges of hearing abilities and adaptive equipment. To protect the identity of the participants no further details regarding the school boards or the individual schools they supported will be detailed.

Verification of Interpretation

Maintaining weekly communication with my supervisor enhanced the validity of my study. Through electronic and voice communication, my supervisor helped facilitate the research process and ensured I did not overshadow the data with my personal bias. In addition, the collection of data has been protected through my methodological process. Data has been collected using purposeful strategies and member checking. Three of the four participants agreed to member check the data. Only one declined due to time constraints of a professional and personal nature. The results were reviewed by my supervisor and challenged for re-analysis. Empirical study of the data has resulted in confidence in the presented conclusions, categories, and subcategories presented in the following chapter. Finally, data which is negative or discrepant has been analyzed against emerging categories. This data has been recorded and reported in the study.

Chapter Four will present the results of the study. Relying on self-reported data, the following questions will describe the experiences of the participants and how they accommodated Deaf and Hard-of-Hearing students to acquire phonemic awareness and

phonological processing skills: (i) What specific visual teaching systems are the itinerant teachers reporting they are using in their literacy instruction to meet the learning needs of Deaf and Hard-of-Hearing students in the inclusive classroom? (ii) What environmental adaptations are the itinerant teachers reporting they are making to the physical learning space to accommodate Deaf and Hard-of-Hearing students? (iii) How are the resources and instruction modified to meet the specific needs of the Deaf and Hard-of-Hearing students within the inclusive classroom? The emerging categories and sub-categories are used to present the results in Chapter Four. Chapter Five discusses the research questions in order.

Chapter 4. Results

The purpose of this study was to explore the experience of itinerant teachers supporting students who are Deaf or Hard-of-Hearing develop literacy skills within inclusive classroom settings. Relying on self-reported data, the following questions examined the experiences of the participants and how they accommodated students who are Deaf or Hard-of-Hearing to acquire phonemic awareness and phonological processing skills: (i) How are the resources and instruction modified to meet the specific needs of the students who are Deaf or Hard-of-Hearing within the inclusive classroom? (ii) What environmental adaptations are the itinerant teachers reporting they are making to the physical learning space to accommodate the students who are Deaf or Hard-of-Hearing? (iii) What specific visual teaching systems are the itinerant teachers reporting they are using in their literacy instruction to meet the learning needs of students who are Deaf or Hard-of-Hearing in the inclusive classroom?

Relying on self-reported data, the preceding questions were addressed using the experiences of the participants and how they accommodated Deaf and Hard-of-Hearing students to acquire phonemic awareness and phonological processing skills. The categories and sub-categories will be presented with the research questions.

Research Question One

The first research question was (i) How are the resources and instruction modified to meet the specific needs of the students who are Deaf or Hard-of-Hearing within the inclusive classroom? This question was answered through the following two categories emerging from the data: (1) Barriers to Inclusive Practice and (2) Role of Service within

an Intervention Model. The sub-categories within the Barriers to Inclusive Practice were:

(a) Perceived Attitudes of General Classroom Teachers toward Students who are Deaf or

Hard-of-Hearing, (b) Need for Alternative Listening Environment, (c) Lack of Financial

Resources Influencing Service Delivery, and (d) Concern for the Continuation of the

Support. The second category included three sub-categories: (a) Collaboration with

Teachers as a Resource, (b) Consultation with Peers, and (c) Home Support as a

Resource.

Barriers to inclusive practice.

The premise of this study was that students who were Deaf and Hard-of-Hearing

(DHH) were being educated within inclusive primary classrooms. Through data

collection and analysis it was apparent that the participants reported a different learning

situation for their students.

Once the interviews were completed it became apparent the participants were

describing experiences which reflected more of a mainstream model with an intervention

approach to supporting DHH students. To clarify, the difference between mainstream and

inclusion is in a mainstream classroom the student is expected to adapt to the regular

instruction and setting. Conversely, with inclusion the teacher and the classroom setting

will accommodate to the learning needs of the student (Stinson & Antia, 1999).

The participants reported they provided literacy skill building and equipment-

based knowledge in alternative learning spaces. In addition, the participants stated their

service to the main classroom teacher primarily involved providing basic information

regarding hearing loss and environmental accommodations. The extensive educational

specialization of the participants in the area of literacy was mostly reserved for direct

interaction with individual students.

Perceived attitudes of general classroom teachers toward students who were Deaf and Hard-of-Hearing.

The participants reported interacting with teachers at different school divisions while delivering support services. Given the large case loads of the participants the students and teachers often had long wait times to wait for direct support services. Amelia and Bonnie describe this in their interview:

> Bonnie: I am currently at 13 so I am beyond that.
>
> PI: What is the typical wait list? So if a teacher is noticing there is a student who needs additional support and that teacher needs additional support, so what is the process to get to…
>
> Bonnie: There is a whole process and school model. So, they do assessment, documentation, the protocol, the SST (the student support teacher) comes in the classroom and makes some more observation and more assessment. It goes to a committee (PI: ah case building) Case building.
>
> Amelia: And that is school to community. And if a student does have hearing loss then I get involved right away (PI: Okay.) as a resource teacher (Amelia & Bonnie, p.6).

Delivering services differs according to student ability and reflects a needs-based model. When the participants arrive at a school to provide support service, the teacher may voice frustration instead of appreciation. Amelia and Bonnie discussed this during their interview and agreed that teacher attitudes varied. This is demonstrated in the following exert from their interview:

> Bonnie: Because in my experience, truly, when they see me coming in the door

they go "Oh good. There's the school-to-community teacher for that child and there we go." But it depends on the personality of the teacher and depends on whether they feel comfortable…and if they take ownership…that child is part of the classroom; not a self-contained model. So, they're [the student] in there. And it's a learning curve for many teachers, don't you find Amelia?

Amelia: Oh yeah, for sure.

Bonnie: It's a learning curve (Bonnie & Amelia, p.5-6).

Here, Bonnie and Amelia have generalized their initial interactions with classroom teachers. Given the accumulated teaching experience between the two participants that reaches beyond their current school board, it is a generalization worth noting for the study.

The participants mentioned general classroom teachers may find it beneficial to develop skills in teaching exceptional learners. This professional development would allow the classroom teacher to meet the learning needs of DHH students but also would help the participants. The classroom teachers would have some foundational knowledge of inclusionary practice and accommodation skills that the participants could build upon. Bonnie noted that the Special Education Certification courses had a positive influence on teacher instruction. Both Amelia and Bonnie extended upon this idea in their interview:

PI: One final question: What advice would you give to a classroom teacher; a brand new teacher is coming out of pre-service faculties?

Amelia: Take Spec. Ed 1 at least.

Bonnie: Absolutely.

Amelia: It should be part of the teaching program having something. Spec Ed

should be part of the teaching program because every classroom is going to have a

student with special needs. You just don't know if it will be AD/HD, hearing loss,

blind-low vision, autism, if it will be mild intellectual you don't know. But it's

nice to at least have an exposure Spec. Ed Part 1 gives you an exposure (Bonnie:

An overview.) of all the exceptionalities so then you can say, "I can get more

information on that" or "I know I learned that I am to research that and learn some

more, I can talk to the parents…" (Amelia & Bonnie, p.15-p.16).

Colleen's interview also illustrated a desire to see classroom teachers learn more about

exceptional learners and take professional development. Colleen describes how Special

Education training could translate into classroom practice:

…If you could take any Spec. Ed. courses…like I find that this is my experience

that over the years that integration is big, but integration doesn't work all that well

if the teacher teaching the kids is not going to be aware of how to modify or how

to accommodate a student with special needs. So I think just getting that

knowledge of how everybody learns as opposed to one way would greatly help

somebody going into teaching. And learning that also and I don't know if they

have-do that in Spec. Ed…learning that you can present the same information to

like vary-different groups of learners. So you know you have a lesson in mind,

you have these goals you have to teach: well, this group learns this way. How can

I modify it to get those learners to be successful? How can I do that? How can I

do that? So it's really not getting a lesson from a book and there you go. Its

differentiation is key. So learning that would be good for anybody going into the

field today. (Colleen, p.15)

Donna was the only participant who did not mention a professional development course in Special Education. However, Donna did speak of teachers continuing to learn about student need: "Be very open to working with specialized itinerant teacher. Set aside the time to learn. Be a team player. And be open minded" (Donna, p.17). From the interviews, it is apparent the participants provide additional information and support to classroom teachers. As well, the participants do not view classroom teachers as being prepared only from their pre-service education programs. This lack of preparation may be a barrier to teacher instruction as well as inclusionary practice.

Colleen described a variety of teacher attitudes towards inclusion for DHH students. Colleen attributed the differences in attitudes to lack of time and training. She also appeared to be sympathetic towards the classroom teachers in her comment: "They are too busy. It is hard when you have 30 students and I am focusing on the one but that is something I have learned along the way. That they do have another 30" (Colleen, p.6). On the other hand, Colleen also reported teachers who were overtly negative in their attitudes towards DHH students. This is revealed in Colleen's response to helping the classroom teacher modify the curriculum: "Some [teachers] are some aren't. Some feel that the students shouldn't be modified. They will feel that they are well "lazy" or you know…it's just my experience is the way it's been" (Colleen, p.7). This thinking could be changed through more teacher education. Colleen suggested teachers continue their training with Special Education Courses so they can properly adapt and modify the curriculum. With the knowledge gained from Special Education Courses, Colleen theorized teachers would be better able to modify and accommodate for the student with hearing loss (Colleen, p. 15). The ability to differentiate the instruction for students with

hearing loss would allow for successful inclusion to occur. This suggested that teachers were struggling within a mainstream education model to modify their teaching due to lack of time and education.

Donna's views aligned with the other participants, revealing time, negative teacher attitudes, and lack of teacher training discouraged more inclusive practice. Large class sizes and the rotating class schedules of the high school division created a time constraint on teachers to prepare for DHH students. This was reported by Donna:

Yes, because by the time they get to Grade 7 and 8 for example, no one else really cares. And if they don't self-advocate for themselves at that point they are going to get lost.

PI: When you mean: "No one else really cares," like the teachers, the staff, or?

At high school, teachers are busy…. The classroom teacher doesn't have time (Donna, p.5).

Providing in-service training of teachers was a major responsibility for Donna and was a frequent responsibility at the high school division as the students changed classes every term. Donna was the only participant who did not state that teachers take Special Education Certification programs to aid in their inclusionary practice. Instead, Donna recommended teachers, "be very open to working with a specialized…teacher. Set aside the time to learn. Be a team player and be open minded" (Donna, p.17). This could be a result of the specialization Donna has, which is specific to Deaf education. Donna discussed the continuing difficulty moving past mainstream education in her quote, "We're working towards inclusion but it's really hard to teach…we have a huge geographical area that we service…. My case load has doubled" (Donna, p.11). With a

large service area and increasing case loads, teacher frustration may also rise. Without addressing the lack of time, large case loads, and perceived attitudes of the teachers, it will be difficult for the current classroom to become inclusive for DHH students.

Need for alternative listening environment.

All four participants described the need for an alternative learning space to provide their invention educational support. With a primary classroom having approximately twenty students and at least one teacher, and with additional background noise, it was difficult for a DHH child to hear his or her specialized instruction. Colleen conveyed her teaching method as "…withdraw…because I'm working on auditory skills and I'm working on speech. It is impossible in a noisy environment to work on those skills" (Colleen, p.4). This paralleled Donna's experiences of supporting individual students in segregated settings. Donna also reported she found it "really hard…to teach the sounds I need to teach in a busy, loud classroom environment with lots of distraction. So I pull them out for a maximum of 40 minutes at a time…a week" (Donna, p.11). The combination of Donna's auditory and verbal training and her reported awareness of the limited acoustic environment of the classroom may indicate her focusing upon sound. Donna defined her greatest role in helping a DHH student to be equipment based to "make the audio signal available to the hard-of-hearing student in the mainstream setting (as) the number one priority" (Donna, p.4).

Lack of financial resources influencing service delivery.

Donna described how budget constraints had a direct impact on how often she could provide direct service support to students. In particular, Donna reported a consistent three-year reduction in service provided for a primary student whose support

went from three forty-minute sessions a week to one session a week. Donna described the

impact of reduced service with a student with the following comment:

> So for the last two years I have one student who is Mild Intellectual Deficit and he
>
> doesn't wear hearing aids because he has a cochi-bi hearing loss…so he is not
>
> aided because the aids would not help where his hearing loss falls. He is reading
>
> at a Grade 2 level-the beginning of a Grade 2 but he is in a grade five classroom.
>
> And he is really, really, really struggling in all academic areas. I was seeing him,
>
> two years ago, three times a week-forty minutes each. And last year I saw him
>
> two times a week-forty minutes each. And now this year, I'm seeing him once a
>
> week for forty minutes and I don't have any other time to give him. (Donna, p.15)

Donna perceived this service constraint as a result of staff decreases, resulting in a larger

caseload for teachers working with students of this subset. This is illustrated in the

following statement:

> Last year we had four…teachers of the Deaf and Hard of Hearing that serviced
>
> the Board. And we have a huge geographical area that we service. Last June, we
>
> found out without any warning that one full time…teacher lost her position. So
>
> this year we have the .5, the .8, and one full-time and that is me. My case load has
>
> doubled. I went from having ten students to nineteen this year. I had twenty-one at
>
> the start, but one graduated last year and two moved away. (Donna, p.15)

Donna reported the cause of these increased job demands to be, "Money. Money. It is

financial cut-backs" (Donna, p.15). In addition, Donna also shared her concerns of the

possible implications these financial restrictions would have in her comment: "So it's

possible in time that if caseloads keep growing and they don't hire back another teacher

or two; it is possible that the job could be cut right back to paperwork and equipment"

(Donna, p.17). This would have a great impact on service delivery and change the

participants' role in supporting DHH students.

The strain of financial resources was also visible to Colleen. She described the

challenges of trying to meet the needs of her schools within the area of her board. Colleen

reported:

> There's so many kids you'd like to see but with the time and the travel…I have to
>
> go to x…I live here, it's an hour and fifteen minutes so that limits how many kids
>
> I can see. And as it is I have 13 kids in 11 schools a week, it's challenging.
>
> (Colleen, p.15)

Amelia's and Bonnie's views also aligned with Donna's and Colleen's reports of

increased case loads. This is evident with Bonnie's comment: "Well our caseload, we

have a max of ten students. (PI**:** Per term?) Per teacher. Per year. So ours is ten…I am

currently at 13 so…I am beyond that" (Bonnie, p, 16). Amelia echoed Donna's comment

regarding the decreasing numbers of professionals in her own board: "When I came to x

board… there was Sam who had my position half time and me. That was it for the whole

board. Now there [are] three of us. We were up to five or six…now are down to 2.3"

(Amelia, p.16).

The teaching experience of the participants was affected by the limited resources.

Consequently, the participants reported a shared experienced of a needs-based model

where students with the most need received the most intervention. Once DHH students

were reading at grade level or were able to care for their own adaptive listening devices,

service delivery was reduced. Participants reported their roles changed from direct

intervention to progress reporting so other students with greater needs could be helped:

> I've got the high needs [students] right now and that's the best I can do is email
>
> and get things out to the other kids who just are at the academic level. The
>
> majority of them are at grade level. They are on par they don't need me in terms
>
> of going in direct service. It is more of an outside role, so I'll meet with the SERT
>
> and give them ideas…so I have quite a few that are they are working fine. Their
>
> needs are equipment needs. (Colleen, p.14-15)

Part of the indirect service Colleen provided included progress monitoring of students.

This was done as a secondary option due to restrictions in time as Colleen stated:

> I have three that I have to put on monitor just because I can't get to all of my
>
> students right now…. Monitor would be the students that I see during direct
>
> support in the past but they seem to be working well at their grade level with
>
> language support. (Colleen, p.17)

Amelia and Bonnie also reported their intervention was reserved for students with greater

learning needs or multiple challenges. For instance, Amelia and Bonnie were involved in

supporting a student who had several learning challenges including cognitive disabilities

and language delays. The following quote connected the financial limitations to the

service delivery provided for this student:

> In the old fashioned days, this little person would have 1-1 because of the many,
>
> many, needs. Now because of money, whatever, we now have gone to shared
>
> model which actually helps out the students but one educational assistant will
>
> have their program to deliver with maybe three or four more [students]. (Bonnie,
>
> p.17)

The needs-based approach to accessing resources was described further by Amelia's and Bonnie's case building. Since, programming and intervention was allotted to students with the greatest need, Amelia reported that "everything is needs based" (Amelia, p.16). Amelia and Bonnie were involved with case building to determine the how much intervention students would receive. For instance, if the student had multiple needs, Bonnie reported teachers would, "do assessment, documentation, the protocol, the SST (the student support teacher) come in the classroom and make some more observation and more assessment. It goes to a committee. Case building" (Amelia, p.16). However, Amelia reported if a student has hearing loss the resource teacher becomes involved. The role of a resource teacher is not explored in the context of this study.

Donna reported supporting students with the greatest needs first and then providing other students with indirect service, such as monitoring. Due to limited resources Donna tried to limit student reliance on school services. Consequently, Donna perceived a goal in her board to not to "…foster dependence on support personnel that's not needed. So our delivery of service is on need" (Donna, p.17). Donna expected teachers to follow Individual Education Plans and to contact the teacher of the DHH if they needed further help. When students were performing at grade level, Donna reduced her involvement so she could focus her resources on students with greater needs. The following data segment demonstrates Donna's approach to working with limited resources:

> It's expected that the classroom teacher or teachers will follow that I.E.P. and if they have questions or concerns that they will access the assigned teacher of the Deaf and Hard-of-Hearing.

PI: Now if that child is performing academically as expected, is your level of

involvement less?

Donna: Yes.

PI: Okay. Does it become a matter of learning-teaching the child to use the

equipment, in servicing the teacher on the equipment as well?

Donna: Yes and monitoring…. Making sure they are progressing as it is expected

(Donna, p.17).

Since resources were limited, several participants described a need to remain

available to their schools and students. To accomplish this, they reported relying on

electronic communication which helped the participants to establish or maintain existing

connections. Both Amelia and Bonnie have contact information on their board's website

and email (Bonnie, p.16). Amelia also reported she "checked [her voice mail] if not the

same day then every other day" (Amelia, p.16-17). Colleen reported she could be reached

through contacting her board office or a direct email to her account which was listed on

the board website (Colleen, p.12).

Donna was the only participant who described the more formal process of referral

of services. The process is different depending upon formal identification of hearing loss.

For students entering Donna's school board the process would involve a liaison between

preschool and home before Kindergarten. This would be done by Amelia who would

determine what services the child would need upon entering school. This is demonstrated

in Donna's statement:

So to access services a parent would contact Amelia who is our Lead Resource

Teacher for Deaf and Hard-of-Hearing students. And there would likely be a

referral coming through the preschool Home Visiting Program going into

kindergarten or a referral would come from the previous school board. Once

Amelia receives that referral she would follow through with it with a transition

meeting. So there is a process to access the service. (Donna, p.17)

For students without a formal identification of a communication exceptionality, support

service can still be provided. However, due to limited resources the equipment and

referral time is allocated for those students with the greatest need. Donna speaks to this in

the following statement:

It is possible to have some equipment support without a formal IEP in place. That

is possible but if we're looking at a child who is below the expected level of

performance, not meeting the provincial standards, then usually an IEP is put in

place. Then it's expected that the classroom teacher or teachers will follow that

IEP and if they have questions or concerns that they will access the assigned

teacher of the Deaf and Hard-of-Hearing. (Donna, p.7)

Based upon Donna's experience, students with the most need receive more direct support.

The service delivery model does support DHH students with and without a formal

identification.

For Colleen, she described a different experience of service delivery. Working for

a different board the referral protocol is unlike Donna's description. Colleen reports, "for

me it's just email me and let me know…. And I pretty much write down what school, the

student's name, and keep contacting the SERTs (Special Education Resource Teachers)"

(Colleen, p.12). Although there may not be a formal process for contacting Colleen, the

IEP process remains the same. Also, the wait time for her intervention and direct service

remains the same.

Concern for continuation of the support.

Given the description of increased caseloads and reduced time with students, there was concern regarding the continuation of the support for DHH students. There was discussion that the interventionist nature of the positions may be changed to accommodate fiscal realities of the school boards. Donna expressed this concern in the following quote:

> …it is possible that the job could be cut right back to paperwork and equipment like it has in other school boards…. Ordering, delivering, installing, and maintaining equipment. In-servicing staff. And paper pushing.
>
> PI: And is that how you envision your job?
>
> Donna: No. I'm a teacher. I want to teach children. I want to teach Deaf children (Donna, p.17).

This concern was not found in the comments of the other participants. Conversely, the other participants focussed their concern on the reduction of their service delivery, not the complete elimination of the intervention.

Role of service within an intervention model.

Collaboration with teachers as a resource.

All the participants reported providing some method of in-servicing. Some of the recounted in-servicing was informal, on-site logistics and some was prepared presented material. The on-site classroom teacher support was more frequently discussed by the participants. Amelia described working with classroom teachers to provide resource support. This is captured in Amelia's comment:

> So I give them support and…[I] try to get in to see the classroom teacher and put

the audiogram onto the Speech Banana so the classroom teacher can see what

they [the student] might be having trouble with. (Amelia, p.9)

This practical support would help the teacher understand what sounds the DHH student

may not be able to articulate in his or her speech or reproduce in his or her writing.

Amelia also stressed the individual needs of the student and helping the classroom

teacher to meet these learning needs. Amelia expressed this in the following statement:

…If they [the student] are writing something and there is no "ed" or "es" at the

end it could be because they are not hearing or they are just learning to hear it. So

it needs to be reinforced and highlighted and that kind of thing. So and giving

them a little package of this student has mild to moderate hearing loss, these are

some of things they might be having difficulty with. Not always, because every

student is different, but if you are noticing some of these this might be why.

(Amelia, p.9)

This individual in-servicing of the teachers would help the students when Amelia was not

there to provide direct service intervention. Amelia also helped to prepare a teacher-

friendly document about hearing loss. This document offered practical teaching

suggestions and environmental accommodations to meet the learning needs for DHH

students (CJ, November 16, 2011). This resource is available to any classroom teacher

employed by Amelia's board.

For Bonnie, she described needing to remind classroom teachers about

communication technology. Bonnie discussed an alternate communication system called

Tango, so a student can verbally participate in class, "Just to keep reminding people that

it is another form of communication for her" (Bonnie, p.4). In addition, Bonnie

commented on having to remind teachers to turn on their FM systems:

> Because they [the teachers] forget. They keep talking or Stella leaves the classroom and she turns it off and she comes back in. And you just have to remind her, like I just have to say to sign to her "turn it on." (Bonnie, p.3)

It is important for classroom teachers to remember communication technology is essential for the inclusion of DHH students in mainstream classrooms.

Like Amelia, Colleen reported helping teachers read audiograms and Speech Bananas: "So I broadly go over the equipment is for this and I broadly go over the Speech Banana so they get an idea of where the sounds are on the audiogram…" (Colleen, p.12). Colleen also used an IPAD application that mimics specific hearing level so a teacher can have a better perspective of his or her student: "there's a great app on there for hearing loss. So I can plug in a student's hearing loss and they [the teachers] actually hear what it sounds like…" (Colleen, p.7)

Once the initial in-service was completed, Colleen reported she continued to monitor her at-level students. This included an equipment check and to determine if other environmental accommodations were needed (Colleen, p.6). This dedication to educating the educators was a strong theme throughout Colleen's interview. The following statement summarizes this passion: "the success of our students greatly depends on the teachers understanding of hearing loss. So in-servicing is most important for our students who are at academic level" (Colleen, p.14).

IEPs did not guarantee students would have an enacted support plan. As Colleen reported, her student had an IEP but the classroom teacher did not act upon the recommendations. Colleen reported providing professional development in a variety of

ways. The following statement describes this situation:

> So the support plan will indicate the student's level of hearing loss is and a
>
> general overview of what those students might exhibit and what be troublesome
>
> for them. And then I give the strategies I am working on and the expectations
>
> which go on the IEP…and also the things they can do in the different areas to help
>
> that student. So, one of them for this particular student was "Please, if you are
>
> doing group work: maybe that student can go out in the hallway, in a quiet
>
> environment. Oh, please send the group to the library." Well, I was in there and
>
> the student was in the middle of things and his table mates were reading and he
>
> couldn't hear a word they were saying. So the next day when they had this type of
>
> discussion I brought in a hearing aid and I said, "Do you mind, do you want to
>
> listen and this will give you an indication of what it sounds like here?" [referring
>
> to the teacher] Now it doesn't give his level of hearing loss but she can also, this
>
> teacher in particular, can pick up that not only is our speech amplified but the
>
> background noise is amplified. So she kind of got an indication so his group
>
> should be the one out in the hallway and not the one that was out in the hallway.
>
> (Colleen, p.8-9)

This exercise helped the teacher to "understand hearing loss" (Colleen, p.7) and the

teacher then accommodated where necessary. Colleen also prepared formal in-servicing

of her board's classroom teachers and provides additional support throughout the

academic year. Colleen describes this in the following interview quote:

> I have been really lucky like the Board what they'll do in the beginning of the
>
> year is have the SERTs come in for a like a day and go over the procedures and

stuff for the year. So I they've given me a chunk of time to speak. So I broadly go

over the equipment is for this and I broadly go over the Speech Banana so they

get an idea of where the sounds are on the audiogram and that. And if they need

specific help then I go in and read it for them. I know I have done that twice this

year. I know for one in particular-the one SERT is like, "I think I got it now!" So

then, that is educating them as well. (Colleen, p.12-13)

In addition, Colleen used mass board emails to reach classroom teachers. Using this

medium she "sent some YouTube clips to all the teachers" (Colleen, p.7) about hearing

loss.

Donna also provided in-service training to classroom teachers. This was done

with the start of every term or a change of classroom teacher. However, it is important to

contextualize Donna's experience as being in the high school division. Consequently,

Donna is part of a support team and students are expected to become more self-sufficient.

This is revealed in Donna's quote:

There is a Learning Programs Support teacher known as LPS teacher in our high

schools and they are my contact person. So before school starts I'll set up a

meeting with the LPS and the student and myself. And we'll have that meeting to

discuss the accommodations on the IEP. We'll also go over the equipment and

come up with some daily routines as to how that equipment will be stored, how it

will be charged, how it will be accessible everyday and we'll come up with some

kind of routine because the equipment has to be plugged in at the end of everyday

so it can charge overnight. It has to accessible to the student the next morning

before they go to their first class. There's lots of organizing and planning in order

to make the equipment even accessible and then we have to track down each of

the student's teachers and in-service each teacher. (Donna, p.4-5)

The need for students to become more independent was due to an inability to rely upon

teachers as a resource. Although Donna could train and recommend strategies to teachers

she wanted to prepare her students self-learning. This is revealed in Donna's quote:

It's unlikely that you would have a classroom teacher that would take that on

[recommendation] and follow it through. It would be a recommendation from a

teacher like myself but then the student would be expected to follow it up on their

own in the classroom. (Donna, p.15)

While teachers were in-serviced, Donna continued to emphasize educating and preparing

her students for independence.

The participants prepared professional in-service development for classroom

teachers, special education resource teachers (SERTs), educational assistants, and other

school staff. The basic information regarding hearing loss, instructional methods, and

environmental accommodations was given to these stakeholders. In-service development

included in-person consultation, mass board emails, and publications created for school

board use.

Consulting with peers to improve programming.

Consulting with their peers provided the participants with the opportunity to

better manage their client case loads and share resources. Since the participants held

additional certification in Deaf education and were employed as teachers of the Deaf and

Hard-of-Hearing, they were amongst a small sub-set of their peers. The degree of

familiarity varied among the participants and across school boards.   The participants

utilized their professional relationships to deliver services to schools and students with limited time and materials.

The close working relationship between the participants was first apparent with participant recruitment. For instance, both Bonnie and Donna were recruited through the direct influence of Amelia. Bonnie was at the location of Amelia's interview. Both Bonnie and Amelia were employed in the same school division and often conferenced on cases. After Amelia told Bonnie the details of the study, Bonnie decided to be interviewed (CJ, November 16, 2011). Amelia aided in the recruitment of Donna through contacting her and sharing some information about the study. This is evidenced in the electronic communication I received from Donna:

Hi Patricia,

Amelia told me that you are doing a research study but I don't know much more than that. I am a…teacher at School Board X. Please let me know how I can help. Thanks,

Donna (DE, November, 18, 2011).

Donna and Amelia shared trust in their professional relationship as Donna agreed to pursue this study based on the little information provided from Amelia. Next, Colleen also reported knowing the other participants although they were employed in different boards.

Colleen relied upon the professional relationships with her colleagues as her caseload was both large in terms of the numbers of students and the geographical area. Also, Colleen reported having previously worked in the same board as the other participants and had maintained her professional connections with her peers. Maintaining

these connections helped Colleen manage a large student case load by sharing ideas. Colleen also described branching out to include other boards and teachers that were not included in this study. Colleen's data describes her collaboration with her peers:

> We do [meet]. I've been lucky enough that I worked in the public board. For like half-one year, half time. So I got to know-I forgot to know her name… [Amelia]. So we meet and also because of our Board we have been trying to come up with some sort of criteria for service. I meet with Board Z's Hearing Resource Teacher…. The three of us get together which is great because it helps me. Because you're on your own out there. (Colleen, p.11-12)

Conferencing with her peers allowed her to feel less isolated to help create more effective service delivery for her students. This was less pronounced in the data of the other participants. However, the other three participants were employed for the same boards and perhaps met more frequently.

Home support as a resource.

Given the limitations participants described with the instructional system, it became important to examine their experiences working with the students' home support. It was possible, that parental involvement in the academic life of a student could be an additional resource for the participants to draw upon. Two different working relationships emerged from the data. One revealed home support to be a possible resource and the other showed the possible limitations of home support.

Amelia and Bonnie described a positive experience working with home support. Their students were provided with additional time to reinforce concepts taught within the school environment. Bonnie and Amelia illustrated this point:

Bonnie: You know, unless you have that it is pretty darn hard. They are for a six,

seven hour day…they can do it sight based and then when they go home some

parents it sure helps when the parents come along with you and work on

objectives.

Amelia: And with the auditory verbal program one of our requests is if the parents

can come in and join so then the goals we are working on together they can

reinforce at home… (Bonnie & Amelia, p.8)

Colleen also reported positive parental involvement which bridged the learning from

school to home. In this particular situation, the parent wanted to provide her child with

similar instruction as he was receiving in school. Colleen provides a description of this

relationship in her quote:

We had one mom when I first started teaching and she goes, "Can I come into-sit

in on your lesson?" and she goes, "I don't have a teacher bone in my body. I don't

have any idea how to help my son. Can I come in and learn?" So she did that…I

do what I can. I send home what I can and I just hope maybe. (Colleen, p.10)

Perhaps this positive experience of home-based support helped Colleen to continue to

view caregiver involvement as a possibility and in a positive manner. However, this

relationship was not typical:

Generally, my family support is minimal but that is not through lack of trying….

[I] offered that [teacher shadowing] as well but some of the areas I go visit is

lower income; parents are just not educated to help. They are busy, they are

working, so it's ah challenging. I do what I can. I send home what I can…

(Colleen, p.10)

As well, interest in the intervention program waned during non-academic terms. During the summer months, Colleen reported the students' programming was not typically continued at home. Colleen reported having attempted to generate greater parental involvement through activities sent home during the summer holidays, "I sent home games…every summer I sent home strategies for my students to keep it up because those summer months are long but it's just life, it goes on and we don't have time for school [work]" (Colleen, p.10). This further illustrated the mixed partnerships with home support the participants experienced. As well, the positive supportive involvement appeared to be the rare experience.

While Donna acknowledged the need and importance of family involvement in student programming, she described the limitations of relying upon it as a resource. Donna described how in her experience she perceived the home support as not being a reliable resource as they lacked the training to help the student: "the only support our students have is [our] support…and home you can't count on that support…Guaranteed they are not trained" (Donna, p.11). However, Donna did not mention if she had offered to demonstrate her teaching techniques to the parents. Further, Donna overlooked the years of informal training the family has through daily interaction and communication with the child. Also, the specific alternative programming the participants provided are not typical parental-child interaction.

Another problematic feature of relying on home support was not being sure the student had completed the work with assistance or if another family member had completed the exercises. With a particular student things that were sent home were completed by a family member not by the child, "With this particular student things that

are sent home get done, but they are done by a family member not by the child" (Colleen, p.17). Even the recommendation of daily reading was not being followed and this frustrated Donna who was working within a "needs base support" (Colleen, p.17) model. The following quote expresses her feelings towards this situation:

…Just to get it [homework] done and get it back. So everything comes back in a sense it is perfect…. Very, frustrating. And with this particular family also we have really encouraged nightly reading…. Twenty minutes before bedtime: read with him, to him, have him help read, and they don't even follow through with that. So support from the family is huge. (Donna, p.16-17)

The need for family support was evident. However, unless the family had the skills and time to dedicate to the intervention-developed programming, there were little perceived positive benefits of the interaction.

Research Question Two

The second research question was: (ii) What environmental adaptations are the itinerant teachers reporting they are making to the physical learning space to accommodate the students who are Deaf or Hard-of-Hearing? The data produced five categories to answer the second research question: (1) The Use of Assistive Technology, (2) Concern for Student Independence in the Mainstream Classroom, (3) Student Self-Management of Adaptive Equipment, (4) Auditory and Verbal Mode of Instruction, and (5) Community Building Amongst Students in Separate Learning Spaces.

The use of assistive technology.

Two of the participants included assistive technology as part of adapting the learning environment for DHH students. Both Amelia and Bonnie responded to this

research question by describing the hearing and speaking equipment one of their students

uses in a mainstream classroom. Since this student was reported to have multiple

exceptionalities and was in early primary, Bonnie reported it was necessary to educate the

classroom teacher in how to use the equipment and to recognize that it aided the student`s

ability to communicate:

> Well. Turning on her FM. Because they [the teachers] forget. They keep talking
>
> or Stella leaves the classroom and she turns it off and she comes back in. And you
>
> just have to remind [the teacher], like I just have to say to sign to her "turn it on"
>
> (Bonnie, p.3). Just to keep reminding people that it [the Dynavox] is another form
>
> of communication for her. (Bonnie, p.3-4)

Colleen's recommendation to teachers involved preserving the sound quality by reducing

unwanted noise and preserving the instructional audio signal. This primarily involved

monitoring of equipment and was focusing on the individual needs of students. Colleen

described she would typically follow-up with teachers with questions like: "Are there

hush-up on the chairs? Do they have the equipment? Is the equipment functioning?"

(Colleen, p.6). Colleen's views presented a different picture of recommendations that

occurred at higher grade levels.

Teachers with rotating class schedules are presented with a different challenge

than their peers in the primary-junior division. With each term, high school teachers are

given new students to teach and provided in-servicing strategies involving preferential

seating, limiting background noise from hallways, ensuring the teacher does not block his

or her face with objects that would limit the speech reading opportunity, and educating

the teacher on the use of amplification equipment. Donna describes the detailed

orientation she provides for teachers:

> Then we have to track down each of the student's teachers and in-service each
>
> teacher so that they will wear the microphone and the transmitter. And then they
>
> understand what some of the barriers are to communication. So if they are
>
> teaching in the front of the classroom, the hard-of-hearing student needs to have a
>
> preferential seat. Doors need to be closed. When a teacher is teaching, he or she
>
> needs to keeps books or hands or pencils away from their face. Not stand in front
>
> of a window because if they stand in front of a light source, their face is shadowed
>
> and the hard-of-hearing student can't read their lips. These are the kind of
>
> communication strategies that will be reviewed with each classroom teacher.
>
> (Donna, p.6)

However, actual instructional methodologies to improve upon literacy acquisition were
not discussed in this interview.

Concern for student independence within mainstream classrooms.

All the participants expressed a need to support DHH students to become
independent learners in the mainstream classroom. This classroom was described as
being composed of diverse learners requiring skilled teacher instruction. The participants
were concerned the teachers were not ready to meet the learning needs of DHH students.
Bonnie also empathized with teachers who teach multi-needs students and how classroom
teachers may be unprepared to meet the needs of exceptional learners. Bonnie speaks to
this situation in her quote:

> You can imagine as a regular classroom teacher that I would definitely want to
>
> call the resource person, the Itinerant to help me because you are not trained in

that area often. So it is great because you are overwhelmed when you have 21

new little students and one with this one with that, four with ADD and all kinds of

difficulties these days. (Bonnie, p.9)

Given the limited resources and lack of teacher training, it is reasonable for the

participants to focus their energy on increasing student independence.

For Amelia and Bonnie, they listed teaching student independent skills as their

main priority in student education: "So the goal, Amelia and I both agree is independence

for this little child" (Bonnie & Amelia, p.7). The theme of encouraging independent

learners became more detailed as the data was reviewed. Interviews revealed similar

teaching patterns with primary-junior students. During these educational years students

were being prepared for their more independent intermediate-senior years. Skills were

explicitly taught according to the cognitive ability of the student. This resulted in a range

of reported experiences that generally included auditory discrimination training, learning

to use equipment, or adaptive classroom behaviours. These skills underlie the theme of

preparing the student to function within a mainstream and not inclusive classroom.

Concern was expressed that the individual needs of the DHH student would be

lost within a typical classroom. Both Colleen and Donna cited classroom teachers as

being preoccupied with other responsibilities. Colleen speaks to this in her quote:

Nobody will request anything. Because they are too busy. It is hard when you

have 30 students and I am focusing on the one but that is something I have

learned along the way. That they do have another 30. What I do try to send and I

try to in-service what I think is key for the teachers to understand about hearing

loss and to understand maybe why the equipment is important and how our

student is hearing. (Colleen, p.6)

Donna describes her experience in this comment:

> …by the time they get to grade seven and eight for example, no one else really cares. And if they don't self-advocate for themselves at that point they are going to get lost.
>
> PI: When you mean: "No one else really cares," like the teachers, the staff, or? At high school, teachers are busy and they expect their hard-of-hearing students to manage their equipment and to manage the workload and to be able to speak up…. They just expect a student if they are in their classroom to speak-up for themselves and to get the help if they need it and to arrange an appointment if they need it. It is just expected. There isn't any babying so to speak. So, by the time they get to high school, they have to be fully independent and able to speak-up to get their own needs met (Donna, p.5).

For Donna, teaching her students independence skills was a necessary part of preparation for high school. Learning to function within a mainstream classroom was also preparation in some ways for living within a hearing world after high school.

For Colleen, independence was closely aligned to learning techniques which allowed her students to operate with their hearing peers with minimal disruptions to the class. This is demonstrated in the following quote:

> So [the teacher] is trying to do that with the help of an EA plus look after the rest of the classroom. And that's where I find the most challenge is you know, you meet with the teacher but the teacher also has 30 other students plus your student. So, we introduce as much as we can and hope it's getting into the program and I

support that once I pull them out. I teach my students the strategies they can use

and bring them back to the classroom to use-my older ones anyway.

PI: To be more self-sufficient?

That's really the goal right? To get the students to be where they are more

independent in the classroom and even with the auditory skills. Even when I pull

them out we are working on listening to directions, "Okay, now tell me back what

is key, what do we need to do?" "I need to circle the word." Okay so here you go,

circle the word. So when they are hearing it in the classroom that is what they are

ending up doing. So hopefully that they can make that connection. They are

listening for the key, the key words (Colleen, p.5).

Ultimately, Colleen is combining her literacy intervention with classroom management

skills so the student can modify his or her behaviour to better function within a

mainstream classroom. This is also found in Colleen's description of how she provided a

primary teacher with visual cuing cards to help prompt a student to know what the

expectations were of him or her during a transition:

…So he's sitting in a classroom, with these new hearing aids on, he's hearing new

things, the teacher's talking at him, so I kind of plan with her and say, "What are

you going to talk about?" And I have pictures and we just go over the pictures. So

when we are in the classroom setting and something comes up the teacher will use

the picture too; like it's time to line up. She has the picture "line-up." So then the

student can associate picture: "I have to do it. Let's listen. Let's line-up and go."

So those things are really important (Colleen, p.3).

While this environmental modification helped to manage student behaviour, it did not

directly teach literacy skills.

Student self-management of adaptive equipment.

Other steps towards independence included learning to use adaptive listening equipment and the caring of the equipment. Donna specifically addressed these areas of skill building and their connection to independence. Donna also reported that "the classroom teacher likely doesn't know how to" (Donna, p.4) change hearing aid batteries or maintain cochlear implants. Further, Donna reported it was expected as the student entered high school they would possess the knowledge to care for their personal hearing devices and the ability to advocate for his or her learning needs. According to Donna, students entering high school should have been prepared in their primary-junior years to be independent. This included the ability of students in high school to advocate for their learning needs (Donna, p.5). These skills were necessary for academic success as Donna stated, "no one else really cares. And if they don't self-advocate for themselves at that point they are going to get lost" (Donna, p.5).

Auditory and verbal model of instruction.

Participants described their school board's emphasis on the teaching of listening and articulation skills which reflects an auditory and verbal instructional approach. The use of ASL was limited to the intervention and was reported in three of the interviews. Amelia and Bonnie spoke of this in their interview. Amelia, "It's just learning to listen. Bonnie, "Yeah, learning to listen" (Amelia & Bonnie, p.6). Amelia further described how "learning to listen" translated in her teaching practice for DHH students:

> They need to know a "k" sound whether you have a moderate hearing loss or a
> mild hearing loss you're going to hear that differently because of the power of the

> hearing aid when did you get your hearing aid? Did you ever hear that sound before? They do need to be taught directly the sounds…that is what the learning to listen, the voice mentorship does. So if a student comes into the school with a cochlear implant tomorrow, we start from the beginning (knocks on table) this is knocking on the table. That was the photocopier. "Ruff-ruff." That's a dog. Because they have to learn to listen again. A student with hearing loss getting hearing aids has to learn to listen all over again because it's going to sound different. (Amelia, p.16)

Amelia revealed an instructional consideration not previously mentioned. Before introducing the visual representation of a letter, it the student may first need to learn the sound of the letter. As such, Amelia reported she would begin her intervention with linguistic listening skills before visual and listening linguistic skills. Colleen also expressed working within an auditory and verbal model:

> My students, the majority of students, actually all of them, all the way along in the mainstream has been auditory-verbal. All my students have had hearing aids. This year is my first cochlear implant student that I'm working with. So, they're all, the parents all want them to learn how to speak, how to listen: so auditory-verbal. (Colleen, p.2)

This response suggested that the students were all receiving the same type of instruction regardless of onset or type of hearing loss. Further, Colleen's interview revealed parental choice may have had some influence on the educational system choosing the instructional approach described. This thread was captured by Donna's interview as well when she discussed educational options for DHH students.

Donna also discussed using an auditory and verbal approach as her primary instructional strategy. For instance, Donna described her "first approach for a typical student [with hearing loss] is to do it through speech and listening" (Donna, p.9). Donna indicated that she understood she was expected to focus on student listening recovery: "Our curriculum here…is very much geared to developing listening and speaking skills…. So that is where our emphasis is. So if that is not what the family chooses for their child then they need to really seriously reconsider the provincial school" (Donna, p.3). Donna was the only participant to reference the alternative instructional approaches offered in the three provincial schools.

There are three Anglophone provincial schools and one Francophone school offering education to students who are Deaf. These publically funded schools deliver the provincial curriculum by certified teachers of the DHH. These schools offer instruction in a bimodal approach using both oral language and ASL as a first language to help students acquire English or French. The schools promote ASL, English, and French as cultures and students receive intensive and extensive linguistic training in these areas by specialized educators (Ontario Ministry of Education, 2011). However, comparing the instructional practices of the provincial schools or to the instructional practices of the participants was not part of the study and could not be achieved from the collected data. Instead, the description is offered to contextualize participant comments regarding provincial schools.

Community building among students in separate learning spaces.

Colleen provided a positive interpretation of separate learning spaces for DHH students. She recounted a sense of community and a climate of trust that was formed

among the students. Also, Colleen reported the greater ease of instruction she had with students who all had hearing loss. Having the students together also allowed Colleen to utilize both her time and skills to provide in-depth and quality educational service delivery:

> It was nice having three or four students with the same type of hearing loss
> working together in a class, on math, language, whatever…they became friends
> and it helped with teaching too, to prepare resources…(CJ, December 6, 2011).

This theme was not found in the data of the other participants.

Research Question Three

Research question three was (iii) What specific visual teaching systems are itinerant teachers reporting that they are using in their literacy instruction to meet the learning needs of students who are Deaf and Hard-of-Hearing in the inclusive classroom? The third research question was answered through the following emerging five categories: (1) Use of Visuals in Teaching, (2) Specific Visual Teaching Systems, (3) Cued Speech, American Sign Language, and Lip-Reading, (4) Reinforcing the Audio Signal with a Visual, and (5) The Influence of Deaf Culture in Language Instruction.

Interviews revealed a multi-layered response to the original research question. First, the participants were able to suggest strategies for a mainstream classroom but were not the principle educators of an inclusive classroom. Second, the instruction the participants provided was done through a tiered model based on an interventionist approach. The visual strategies found in the participant data differed from those suggested in the research literature. Third, one participant reported using visuals as a secondary methodology after auditory training.

Use of visuals in teaching.

None of the participants reported using a specific visual teaching system as described in the research literature. When asked during the interview, the participants acknowledged they were aware of specific visual systems but did not use them in their instruction. Instead, the participants reported these programs were being used in the mainstream classroom by the general teacher. Also, participant definition of visual was the use of letter cards. This can be part of regular reading instruction and is not a specific visual teaching method. The variation between the research definition and the participants' definition of visual may be due to the open-ended interview questions. The participants were not provided with a definition as to prevent biasing their responses. Subsequently, participant responses indicated they defined visual to be any instructional method or material that relied upon vision.

The participants who were educated in American Sign Language (ASL) included this in their definition of a visual. Three of the participants reported using ASL as part of their visual approach to teaching. Further, these same participants reported they would use a specific visual system if warranted by student need. Only one participant reported they would not use ASL or the use of a specific visual system. In addition, one of the participants reported having using Cued Speech (CS) in her past teaching. The participants also described how visuals were used to help manage or teach students transitional behaviour.

Each of these claims will be discussed with supporting participant quotes.

Specific visual teaching systems.

While both Amelia and Bonnie were aware of the specific visual teaching system

of Jolly Phonics (JP) they reported they would use it based on "student need" (Amelia & Bonnie, p.6). On the other hand, Donna reported that she would not use the program as her intervention was more specialized than the JP program. Instead, Donna thought the program was better suited to the mainstream classroom as she stated the JP would reduce the student's need to rely on listening. This is illustrated in the following quote:

> Again, I want to use listening and speech as much as possible in my programming cause my programming is alternative. And I'm dealing head on with the hearing loss. So, if I provide a visual I am eliminating their need to focus on their hearing… (Donna, p.9)

As well, Donna stated she focussed on teaching different phonological skills with her students during her instruction than JP would allow. Colleen was the only participant who had reported knowing about Visual Phonics (VP). Post-interview, Colleen shared a research article about VP. In later correspondence, Colleen reported she had incorporated aspects of the VP program into her instruction. Colleen described her updated teaching approach and her knowledge of the JP program in the following email:

> I scanned the article again. I am not trained in this (VP) method, but use the concept behind it along with other methods I have learned along the way to teach phonemic awareness to my students. Some students require a more intensive approach…lip reading, artic work and some just require sound cards. In some cases I have used sign support for my students who cannot hear /s/. For my younger ones, most teachers use the Jolly Phonics program which utilizes action, sound and songs to teach the basic phonemes. (CE, March 6, 2012)

Cued speech, American Sign Language, and lip-reading.

The visual aspect of Amelia and Bonnie's instruction was a combination of CS, ASL, and pictograms. Bonnie's approach is significant as it provided intervention support within the mainstream classroom. For instance, Bonnie described using the aforementioned visuals with a multi-exceptional needs student in the following quote: "I sign with her because it is just natural for me to sign…. And she understands sign. And she doesn't use it a lot. But if I am signing to her she nods her head in acknowledgement…She comes signing and pointing to the picture symbols…" (Bonnie, p.4). This communication method may have worked as part of Bonnie's instructional style because she was comfortable using ASL and her previous experience as a primary teacher. In addition, the classroom already had existing visual aids such as anchor charts for learning and instruction. Consequently, Bonnie's focus was on creating a visual system to help a student function within the classroom. With the aid of Amelia, they created a "picture communication system" (Bonnie, p.4) that is on the student's desk. While these are examples of visuals materials, they are not part of a specific visual teaching system and do not teach a literacy concept.

Reinforcing classroom routines with visuals.

Colleen reported that her literacy time was also used to teach students how to function within the mainstream classroom. For instance, when she was teaching listening skills and behavioural expectations:

Even when I pull them out we are working on listening to directions, "Okay, now tell me back what is key; what do we need to do?" "I need to circle the word." Okay so here you go, circle the word. So when they are hearing it in the classroom that is what they are ending up doing. So hopefully that they can make

that connection. They are listening for the key, the key words. (Colleen, p.5)

Further, classroom behaviours were reinforced with visual aids for younger students with the use of flash cards. Collaborating with the classroom teacher, Colleen reported she would create a picture for a targeted behaviour. For example, the teacher would have the card with an image for lining-up "…So then the student can associate picture, "I have to do it. Let's listen. Let's line-up and go…" (Colleen, p.3). This behavioural management is tied into environmental print, but does not teach explicitly phonemic awareness or phonological processing.

Reinforcing the auditory signal with a visual.

Amelia's instruction sometimes included a visual element that reinforced the auditory and verbal skill component she was teaching:

> Through the mentorship program we are reinforcing learning to listen. So focusing on the listening first. Sometimes if they can't get the idea or the concept there is a visual…but right away you're putting it right back into hearing. But your visual could be your visual in the middle.
>
> PI: Ok, so then if I'm understanding this it is a progress to get them moving from the physical gesture to more of the listening?
>
> Amelia: There again, it depends on every student (Amelia, p.15).

Also, Amelia reported using a different phonics program which focussed on teaching "the sounds of the letters and putting them together" (Amelia, p.12). The method Amelia referred does not provide a physical representation of the phoneme. Using a visual aid is not the same as using a specific teaching visual system as a visual aid does not convey phonemic information. In addition, Amelia reported she no longer received requests to

teach Cued Speech, due to the time it took to learn the program. She also could not recall the last time she used it for instructional purposes (CJ, November 16, 2011). However, Amelia did mention a request to teach a student lip-reading skills (CJ, November, 16, 2011). Conversely, Colleen reported that she did not have the skill to do it but, "I know my kids do it…. But it's just—I haven't used them" (Colleen, p.11).

Colleen's interview provided insight into the use of participant-defined visual materials within an intervention model. Colleen's methodology developed and changed as she explored new literature. This became apparent in her quote, "I kind of make it up as I go…There was a paper that I read and it was a lady in the States who had and it was basically visual phonics" (Colleen, p.3). Using her previous training and new approaches, Colleen maintained a student-centred approach. Colleen's multi-method approach involved ASL and other visual materials. Colleen reported she often created "the whole thing together on the visual program on spelling…" (Colleen, p.7). However, neither ASL nor flashcards are part of a specific visual teaching system. The use of a visual was to aid student transition and Colleen's comments did not reveal any further use of mainstream classroom visual aids.

Colleen provided visual strategies during her intervention that may help the students in a mainstream classroom. However, the use of specific visual teaching systems was not present in her interventions with the students. Instead, Colleen provided intensive and explicit modeling of literacy strategies for her students. Colleen reported using the letter cards as visual anchors to help reinforce decoding skills. The following data portion depicts how Colleen would use these cards in a typical literacy lesson:

We're working on reading skills-decoding. So I have a lot of, I use the cards….

They just have the consonants on them…. We just look at them. Or we look at the vowel rules. So "o" or "oa" what vowel sound does that make? We do a lot of flash and repetition. So what sound does this make? And we show the visual so they can associate the sound with the card. (Colleen, p.3)

Colleen reported using ASL for students with no language, with the goal of replacing it with oral language in the future. As well, Colleen reported a parent had previously requested ASL be taught to his or her child due to progressive hearing loss. In both cases, ASL was a secondary source of communication. The following interview quote illustrates this:

My students, the majority of students, actually all of them, all the way along in the mainstream has been auditory-verbal…. So, they're all, the parents all want them to learn how to speak, how to listen: so auditory-verbal. I did have one student when I first started, he had a progressive hearing loss, his parents were worried he would loss his hearing totally. That parent wanted me to introduce sign language. So, Mom would come into our lessons then we would work up the basic Sign Language. Just in-case his hearing failed. (Colleen, p.2)

The focus of this instruction was to provide students with access to an expressive language which is a different instructional focus than developing phonemic awareness or phonological processing. Using a specific visual teaching system would not be an appropriate instructional strategy in these situations.

Donna's also described that ASL in the mainstream classroom was meant to be temporary. The following portion of Donna's data illustrations her experience of ASL in the mainstream classroom:

> The Board does have two Educational interpreters. So depending on what the initial assessment and placement is and that would be decided in the transition meeting…. Then an educational interpreter may be put in place to help that student…. They would be interpreting the oral teacher into sign. As their [the students'] oral language and their listening skills develop, if they move ahead as expected, it is understood that the supports in place would lessen as the need for them decreases. (Donna, p.6)

Although not a specific visual teaching system, ASL supported a visual methodology which did not align with the auditory and verbal instructional approach the participants reported. Also, it should be noted that Donna was not trained in ASL and perhaps this may explain its limited use in her instruction.

Donna reported limiting the use of visual materials in her linguistic instruction to students with multiple learning needs or several exceptionalities. In such cases, the intervention would follow the tiered approach with the lesson being skill based. For instance, Donna would typically expect a DHH student to develop literacy skills:

> without needing the visual. But for students who have multiple exceptionalities and we are seeing more and more of those; for whatever reason, they may not have the intellectual ability, then the only way they can be successful in their phonological processing is with a visual. Then we would bring in a visual with the hopes of eventually being able to limit it or eliminate it completely. (Donna, p.8)

When asked to clarify her use of a visual, Donna provided an example involving learning manipulative: "It might just be a square cube or a square piece of paper with an "A" on it or each square would have a letter of the alphabet and they can manipulate the little

pieces of papers to make a consonant-vowel-consonant word like "cat" for example"

(Donna, p.9). Donna also classified other visual learning aids as manipulative learning

devices. However, the following portion of her interview provided another example of a

visually based literacy activity:

> they have to cut out little squares with the letters on it and they have to be able to
>
> manipulate those letters to build words. Starting with two letter words, to three
>
> letter words, to four letter words, to five letter words. And then sorting those for
>
> patterns then transitioning to using them in a sentence. (Donna, p.11-12)

Consistent with the other participants, Donna did not use a specific visual system in her

instruction. Instead, Donna used visual aids to support the school's literacy program.

The influence of Deaf culture in language instruction.

Participant interviews revealed differences in approaches to literacy

instruction which may have been connected to post-graduate education. The participants

whose post-graduate education included exposure to ASL and Deaf Culture self-reported

using a participant definition of visual methodology in their literacy instruction.

Participants who reported being taught about Deaf culture during a post-graduate

certification program also expressed a willingness to use ASL and specific visual

teaching systems. Conversely, without this exposure the literacy instruction maintained

an auditory and verbal emphasis.

An appreciation and knowledge of Deaf culture may have influenced the

instructional approaches of Amelia, Bonnie, and Colleen. Deaf culture promotes the use

of visuals in education and ASL as an equal form of communication within the classroom

(Small & Cripps, 2009). While the study was not designed to explore Deaf culture in

mainstream classrooms, the participant data revealed it existed within the context of their intervention.

The presence of Deaf culture was most pronounced in Amelia's data who described the influence of the "Deaf Power" (CJ, November 16, 2011) on her post-graduate education. This cultural movement had a two-fold purpose on Amelia's campus. First, it promoted a positive image of Deaf culture and acceptance. Second, it promoted the Deaf culture among the hearing community (CJ, November 16, 2011). Amelia completed her training and used her signing skills to become an interpreter. The flexibility in her language skills is demonstrated in the following data segment, "[I] found that interpreting may not be the best area for me just because of my personality and the personality you may need to be an interpreter. And went into the auditory route when I moved here…" (Amelia, p.1). Bonnie shared her post-graduate teaching experiences as developing her instructional skills and approaches. This is revealed in her following statement, "Because my experience with children of the Deaf…in x Board, if they had any kind of hearing impairment we didn't have Amelia come in or a specialist come in. We just had to gain information on our own" (Bonnie, p.2-3). This may suggest Bonnie found these experiences more significant to her development as a teacher than her formal training. Bonnie's interview also revealed a flexibility and comfort working among differently-abled learners. Bonnie described her decision to pursue teaching and later her experience working with DHH students:

> I'll work with children with special needs because it is a bit of nursing, a bit of O.T., physical, everything…. I started teaching in the primary division and went and taught in two different classrooms for autism in a segregated setting. Then I

went back and taught in the junior division, went back and did some spec. ed.

teaching in "x" in a segregated school at the time called "N" right beside the

School for the Deaf. Then went back and taught grade 7-8. So I have had

experience in all divisions with the regular streams. Then with children with

special needs who were integrated partially or parachuted in for many things. So I

have had experiences on many sides of the fence… (Bonnie, p.2)

Bonnie's interview illustrated her ability to support students in a variety of learning

situations with multi-method approaches. Bonnie described more of her teaching

experience with DHH children than her formal training. As well, her teaching experience

supporting students in various settings has prepared Bonnie to provide different levels of

intervention to DHH students and multiple exceptionalities.

Deaf culture was also part of Colleen's post-graduate training. Colleen described

that the program required hearing students to learn about Deaf culture through ASL

classes. Colleen described how language training and cultural awareness were related. As

such, learning about one would increase her knowledge of the other. Colleen reported her

program was preparing her to become bilingual:

Bi-cultural, bi-lingual. (PI: okay) So, in the school setting they are teaching

English but they are also teaching ASL; they are merging two. At [a provincial

school for the Deaf], when I did my placement, they had a hearing teacher and a

Deaf teacher working together to give the students the English language, syntax,

and what-not, as well as the ASL. They bring it in together to give them what's

called bi-bi. (Colleen, p.2)

To provide this for her students, Colleen was trained in a multi-modal approach. Learning

alongside Deaf students, Colleen was required to learn ASL and was exposed to Deaf culture. She describes this program:

> Those hearing students who weren't proficient in Sign were required to take Sign Language Courses; the ones that were Deaf wanted to work in a provincial school so those students focussed on a bi-bi program. But that was offered to us as well…. We had auditory-verbal therapy…. We had a class in speech. We had a speech in Sign Language. We had the bi-bi offered to us. Audiology come to us. (Colleen, p.1)

Finally, Colleen also reported the program required the students to complete field placements using the three main linguistics approaches. Colleen described her placement experience:

> So we were introduced to everything and we had to have placements in all three settings. We had to follow an Itinerant Teacher who travelled. We had to go to a segregated classroom setting so in my case I went to a classroom with a student who had cochlear implants, which was new at the time. Then we had to do one provincial placement, so the provincial school for the Deaf. So, in the school setting they are teaching English but they are also teaching ASL; they are merging two. At V, when I did my placement, they had a hearing teacher and a Deaf teacher working together to give the students the English language, syntax, and what-not, as well as the ASL. They bring it in together to give them what's called bi-bi. (Colleen, p.2)

Perhaps the combination of the bi-cultural peer learning, bi-cultural education, and the bi-cultural placement exposure contributed to Colleen's instructional methodology she self-

reported.

Donna reported several factors which may have contributed to the prevalence of an auditory and verbal approach in her interview. First, she completed her Deaf education certification through an online program which did not have several of the elements that Colleen had cited. Her program did not have interpersonal peer interaction, mandatory field placement, or a focus on a bilingual approach. Instead, she chose the auditory and verbal route which aligned with the school board's educational model. Second, Donna shared that this decision was influenced by having a DHH child: "In Deaf Education there are two routes to go. One is ASL where ASL is the primary method of communication. The other is oral Deaf Education. My son is oral so I pursued the oral Deaf Education" (Donna, p.2). Third, Donna completed her Deaf education certification after her children were born and one of her children was diagnosed with hearing loss. She is the only participant to self-identify with a connection to hearing loss. Raising a child with hearing loss as a hearing parent influenced Donna's teaching path: "…And when my oldest child was diagnosed with hearing loss, I investigated, doing my Deaf Ed. qualifications and that time I could do them online…" (Donna, p.1)

The issue of Deaf culture arose in Colleen's decision to pursue either an auditory and verbal or an ASL approach in her teaching in her data. Again, her decision was directly connected to her own experience raising a DHH child as a hearing parent. She described this in the following quote:

> There are two distinct communities. The Deaf communities spelled with a capital
> "D." It emphasizes Deaf culture and uses Deaf role models. They pretty much
> keep to themselves within their own community. And then there is the oral-deaf

> community. Which means that the deaf or the hard-of-hearing child is usually
>
> born into a hearing family. So, the family chooses which method of
>
> communication they want to go with and what methodology they want to follow.
>
> (Colleen, p.2)

Donna did not feel part of the Deaf community in her personal life and therefore, it is

understandable Deaf culture is not incorporated into her professional life. Consequently,

her interview illustrated Donna approached hearing loss as a disability and not as a

culture. This would explain the distinct difference in her reported instructional

approaches to literacy instruction.

Summary of Results

The purpose of this study was to examine the experience of itinerant teachers

supporting Deaf and Hard-of-Hearing (DHH) students within inclusive classroom

settings develop literacy skills. This chapter presented the results of the experiences of

four itinerant teachers who were supporting students with varying degrees of hearing loss

who were being educated within mainstream classroom settings. Intervention was

provided based upon student need. As well, the data revealed the participants provided

support to other teachers to help meet the needs of DHH students. Relying on self-

reported data from individual interviews, the research questions examined the

experiences of the participants and how they accommodated DHH students to acquire

phonemic awareness and phonological processing.

In conclusion, through their self-reported data, an enriched understanding of how

the participants work within an intervention model to meet the needs of their DHH

students was discovered. This new understanding included learning the participants

provided intervention support to DHH students based upon learning needs in alternative learning spaces. The participants did not use a specific visual teaching system as defined by the research literature. The participants were also involved in educating other teachers and educational support staff in issues of Deaf education and environmental accommodations.

In the Chapter Five, the results are discussed with the emerging themes and analyzed with the specific research questions. This Discussion chapter also includes: connections with existing literature, suggestions for future research, suggestions for in-service and pre-service teachers, limitations to study, and the conclusion.

Chapter 5. Discussion

The purpose of this study was to explore the experience of itinerant teachers supporting students who are Deaf or Hard-of-Hearing develop literacy skills within inclusive classroom settings. Relying on self-reported data, the following questions examined the experiences of the participants and how they accommodated students who are Deaf or Hard-of-Hearing to acquire phonemic awareness and phonological processing skills: (i) How are the resources and instruction modified to meet the specific needs of the students who are Deaf or Hard-of-Hearing within the inclusive classroom? (ii) What environmental adaptations are the itinerant teachers reporting they are making to the physical learning space to accommodate the students who are Deaf or Hard-of-Hearing? (iii) What specific visual teaching systems are the itinerant teachers reporting they are using in their literacy instruction to meet the learning needs of students who are Deaf or Hard-of-Hearing in the inclusive classroom?

Several unexpected themes were captured in the data analysis of the study. First, the presence of Deaf culture and its influence in the lives of the participants emerged in the data. Second, the study also found participants were delivering services based on a Response-to-Intervention (RTI) principle. RTI provides academic support through direct and modeled intervention (Fuchs & Fuchs, 2006). The RTI model also requires assessment and monitoring of student progress. Since this study did not examine student test performance, only the intervention aspect of the model will be considered. Finally, the reading instruction provided during the intervention did not use any specific visual teaching program.

Deaf culture arose as part of the study when the participants described their post-

certification programs in Deaf education. Three of the four participants reported to have completed training in American Sign Language (ASL), which is the language of the Deaf. This would allow these participants to communicate with Deaf students and their families. Amelia, Bonnie, and Colleen spoke of an awareness of Deaf culture and community. Similar knowledge of Deaf culture could be found at a provincial school for the Deaf and Hard-of-Hearing (DHH). However, the study was not designed to compare the instructional methods or cultural communities of the provincial schools for the DHH and the mainstream classrooms. Although their instruction was provided within a mainstream education model, the participants provided educational services and support to DHH students so the students would not need to leave their communities to obtain an education.

The educational support provided by the participants aligned with the principles of the RTI model of tiered intervention. Participants reported providing the most support for students who had the greatest need. The intervention was necessary due to the acoustic issues a general classroom presented to instructing DHH students. For this reason, students were provided with direct and individual instruction in a separate learning space. The strategies and materials used during the literacy intervention were not modified to meet the specific need of DHH students to acquire phonemic awareness or phonological processing. These strategies were influenced by school board expectation which stressed an auditory and verbal model of communication. Consequently, the use of a specific visual teaching system within this auditory and verbal approach to instruction would be secondary to the amplification and preservation of sound. Beyond the auditory and verbal instructional approach, participants also discussed how they modified the

resources and instruction, adapted the environment, and the use of a specific visual teaching system to assist DHH students develop phonemic awareness and phonological processing skills.

Resource and Instructional Modifications

Resources and instruction were modified by the participants to meet the learning needs of DHH students during support programming provided in alternative learning spaces. The participants delivered the mainstream literacy program during the intervention session. DHH students were not presented with curriculum which reflected Deaf culture. This mainstream education model is different from an inclusionary focus which would present information in a bi-lingual approach and provide Deaf role models in the curriculum. Providing students and their families with choice would prevent students from having to choose between provincial schools for the DHH and mainstream schools to receive instruction that would meet their learning needs.

Environmental adaptations.

Environmental adaptation of the general classroom was focussed upon increasing auditory reception of the oral signal and reduction of residual noise. This aligns with a focus on an auditory and verbal instructional approach to education. Even with these adaptations, the participants reported they preferred to deliver their intervention in a separate learning space.

Specific visual teaching systems.

The participants reported that they educated DHH students within an intervention-based model. Working within an RTI model, the participants described techniques and resources they believed would help DHH students learn to become more skilled at

reading. The students were to internalize the learning strategies and use them independently in the mainstream classroom. The participants reported their individualized programming could not be done at a Tier 1 level (Gersten & Dimino, 2006) during whole-group instruction, using the visual aids and graphic organizers common in many classrooms (Luckner, Bowen, & Carter, 2001). In addition, the intensive acoustic training the students required was not possible in a typical classroom (Crandell & Smaldino, 2000).

As part of the educational support they provided, the participants reported creating individual lesson plans to meet the literacy needs of each student. While the plans may have employed aspects of ASL, none of the participants reported using a specific visual teaching system. The supplemental instruction did employ direct literacy instruction which was similar to Juel and Minden-Cupp (2000), which involved the student practicing a specific phonemic unit, practicing a phonemic-focussed activity, and assigning of additional homework. However, these activities were not specifically adapted or modified to reflect the visual learning needs of the DHH student. Consequently, the mainstream literacy program was being adapted during the intervention by using direct and individual instruction in a separate learning space.

The study also reviewed literature regarding specific visual teaching systems of Cued Speech (CS), Visual Phonics (VP), and Jolly Phonics (JP). The one specific visual teaching system discussed in all the interviews was JP. Colleen was the only participant familiar with VP. The JP program could be used at any of the three tiers of RTI to help develop the literacy skills of an inclusive student population. Even though CS, VP, or JP could have been employed at a Tier 2 intervention it was not. Donna stated her

programming was too specialized for JP and thought JP could be used by the general classroom teacher (Donna, p.9). The participants reported using their instructional time for more specialized literacy teaching involving auditory and verbal instruction. Also, the participants did not discuss using a physical gesture to represent phonemic information like the programs of CS, VP, or JP provided. This demonstrated a discrepancy between the research literature's use of the terminology and educational practice. The participants may not have used any specific visual teaching system as their Bachelor of Education or their Deaf education did not include training in these systems.

Three of the participants reported using ASL when asked about visual methods of literacy instruction. Only Donna did not use ASL in her literacy intervention. However, as the literature review demonstrated, ASL is not a specific visual teaching system and finger-spelling does not provide the phonemic information of a word. Although ASL does not transfer phonological information, three of the participants reported having used it during their literacy instruction. The depth of linguistic knowledge each participant possessed was not known. It is possible that participants were being asked to specialize in a curriculum field which is not their primary area of education. Also, the findings of research require time to inform the practice of teachers.

The use of visual aids during literacy instruction was explored through the existing literature of Luckner, Bowen, and Carter (2001) and Wurst, Jones, and Luckner (2005).The information collected from the participants revealed the articles by Luckner et al. (2001) and Wurst et al. (2005) lacked the in-depth knowledge of how to adapt visual resources specifically for DHH students. Amelia and Bonnie suggested that many primary classrooms they had been involved with used visual charts for literacy teaching.

This suggested that visual aids are not enough to teach the specific skills that Amelia and Bonnie report their invention teaching provided. Instead, as Luckner et al. (2001) and Wurst et al. (2005) concluded, visual resources do not explicitly teach phonemic awareness or phonological processing. The visual aids in the present study aligned more with Ehri's (2005) description of environmental print awareness which provided students with visual reminders for transition times during the day. The intervention was intensive and student-focussed but it is not known if the strategies were practiced or modeled in the mainstream classroom.

Participants reported general classroom teachers were unprepared by pre-service programs to meet the learning needs of DHH students (Proctor & Niemeyer, 2000; Sik Jung, 2007). This was reflected in the interviews with the participants stating teachers needed more education in specialized instruction. Further, classroom teachers typically did not possess the signing skills or additional Deaf education certification to help teach literacy skills in an adaptive manner (Stinson & Antia, 1999). This aligns with research by Trezek and Wang (2006) and Trezek et al. (2007) which found that teachers reported having difficulty teaching phonics and phonological processing to DHH students. The teachers in these studies specifically requested professional development in linguistic training to teach DHH students. Again, this is similar to the in-service demands the participants reported in the present study. The participants responded to teacher enquiries through electronic and telephone communication until an in-person visit could be arranged.

Stinson and Antia (1999) discussed barriers to inclusion for DHH students. Within the context of the data collected in this study, it became apparent the participants

were working within mainstream education. The participants were helping to equip the student with the necessary skills to adapt to the regular classroom environment. This aligned with Stinson and Antia's (1999) definition of a mainstream education model: "…mainstreaming implies that the child adapt to the regular classroom, whereas inclusion implies that the regular classroom will adapt to the child" (p.164). The challenge becomes how to change the instructional methods to support the learner so both the teaching and the learning are integrated. This would be the starting point of another study into the literacy instruction of DHH students.

Students who required the most need received the most support. Again, this reflected a needs-based model or a Tier 3 intervention approach to education. Similar to Donne and Zigmond (2008), participants reported supporting students with the most need. This support declined relative to student need. Stinson and Anita (1999) also reported teachers in mainstream classrooms tended to be responsible for students with mild to moderate hearing loss. Consequently, students with more severe cognitive difficulties, language delay, and greater hearing loss would receive more support from the participants. Indeed, like Stinson and Antia (1999), the participants in the present study also noted that schools for the Deaf and Hard-of-Hearing (DHH) may be appropriate choices for some students. For instance, participants reported the provincial schools provided an alternative to the auditory and verbal approach used by the mainstream education model.

The participants were also occupied with additional duties which indirectly supported student education. These additional duties provided the support necessary for DHH students to function within a mainstream classroom. For instance, the in-servicing

of classroom teachers and equipment monitoring is not found in research literature in relation to an RTI model or inclusive education. Instead, the participants' specialized training was being utilized to meet a variety of needs within their school boards. Their duties were more aligned with the Education for All (Ontario Ministry of Education, 2005) recommendations for supporting students with special needs in the areas of numeracy and literacy from Kindergarten to Grade 6. The four recommended areas of instructional focus were teacher education, professional development, program planning, and assistive equipment (Ontario Ministry of Education, 2005). Although, the participants were already contributing to these recommendations it is not known how these recommendations are being translated and maintained by the classroom teachers. It is not known how frequently classroom teachers require updating or retraining of these recommended training areas.

Using an auditory and verbal approach to literacy instruction, the participants provided educational support for DHH students. The participants were following their school boards expectations of teaching DHH students articulation and hearing skills. The use of visual aids and specific visual teaching systems would not align with an auditory and verbal approach which the participants reported as focusing on listening and speaking. This may explain the discrepancy between the findings of research literature which recommends the use of visuals and the auditory approach described by the participants (Hutchinson, 2000; Paluski & Kaderavek, 2002; Perfetti & Sandak, 2000). Also, there were differences between how the participants described the use of a specific visual teaching system and how the research literature defines the use of the system (Jolly, 2000). This discrepancy could be due to the participants learning about specific

visual teaching systems after their post-certification in DHH education.

Also, the participants may not have a full understanding of linguistic development or the importance of phonemic awareness and phonological processing for DHH students (Narr, 2006). It is not clear how much of the post-certification DHH program is comprised of teaching about language instruction or linguistic development. In addition, the participants were focussed on preparing DHH students to function within a hearing and speaking classroom. Also, Donna described that by families choosing to place their children within the school board they were also choosing an auditory and verbal education (Donna, p.2). Given the reported limited amount of instruction time they had with the students, the participants may have decided to focus on the board and family directed focus of speaking and listening.

The participants also described issues of comorbidity which influenced their decision to use visuals. Participants explained they would provide a visual for students who presented with learning disabilities or intellectual disabilities in addition to the hearing loss. Consequently, the participants may have made instructional decisions influenced by issues of the comorbidity and not the hearing loss. Further, an auditory and verbal approach focusses on a developmental delay and places the hearing loss as secondary. Ironically, the use of visuals and specific visual teaching systems would aid the learning of both students with developmental delays and DHH students (Bennett, Dworet, & Weber, 2008; Hutchinson, 2009).

Situating the interviews within the context of the existing literature, it is apparent that there continues to be challenges towards inclusion of DHH students. It may not be possible to have full inclusion of DHH students until their teachers have mastered

foundational literacy concepts and specific visual teaching methods. Both early readers and students with learning exceptionalities would benefit from instruction supplemented with visual aids and specific visual teaching methods (Bennett, Dworet, & Weber, 2008; Hutchinson, 2009). The information provided visually would reinforce the auditory instruction for students at risk of academic retention due to low literacy rates (Lieu, 2004; Narr, 2006). While the use of visually supported teaching is beneficial to the entire class, it is necessary for the DHH student (Dodd-Murphy & Mamlin, 2002; Mahshie, Moseley, Lee, & Scott, 2006). On the other hand, for special education resource teachers, specific visual teaching systems can be used in small group and individual instruction to help English Language Learners, students with Autism, and other exceptionalities (Ekpo, Udosen, Afangideh, Ekukinam, & Ikork, 2007). Providing all teachers who work with primary students with knowledge of a specific visual teaching system will enable teachers to teach the fundamental reading skills to diverse learners.

The diverse primary classroom could be supported with the specific visual teaching systems used during whole group instruction which the teacher could learn during professional development time or pre-service education classes (Jolly, 2000).This approach may allow phonemic awareness and phonological processing skills to be learned by more students during whole class instruction. Consequently, this would lead to an inclusive classroom learning experience. Full inclusion may be possible if teachers are trained to meet the learning needs of these students and the classrooms are acoustically adapted to both enhance the audio signal and reduce unwanted noise. This study is only one part of a larger context of the Canadian educational experience and it is important not to generalize its findings.

Implications for Future Research

The current study adds to the existing literature regarding literacy education of DHH students. The contributions of the participants revealed avenues for possible further enquiry. Future investigations may research the relationship between exposure to Deaf culture and linguistic instructional methods used in different learning situations. This underlying theme began to emerge in the data but was not the primary focus of the study. Also, researchers may wish to explore how linguistics is taught in the provincially funded schools for the DHH. Such a study could possibly share with the general teaching population the instructional methods currently practiced by a specialized teaching subset. Through sharing this instructional knowledge it is hoped mainstream classrooms will develop effective literacy practices for DHH students.

Overall, participant interviews revealed barriers to inclusive classroom practices. Future studies may wish to examine both pre-service and teachers' beliefs toward inclusionary practice. This type of examination may help reveal what support, training, and education these groups think would benefit the creation of an inclusive classroom. In addition, a similar study could be done to determine how general classroom teachers modify the strategies of the DHH teachers. Future research could be done to determine how to eliminate barriers to inclusive education for DHH students.

Implications for Pre-service and In-service Education

Participants reported that their skills in supporting DHH students were acquired through post graduate education programs and through work experience. The participants reported current classroom teachers were not being prepared by pre-service education programs to meet the learning needs of DHH students. Given the reports from the

participants, it may be worthwhile for pre-service programs to reconsider their Bachelor of Education program. The program could require all teacher candidates to complete a course in learning exceptionalities, where issues of hearing loss and Deaf culture would be addressed. This would expose teacher candidates to some of the basic principles of environmental accommodation and modification. In addition, the Language Arts portion of the program could be remodeled to address visual linguistic instructional methods of teaching phonics and phonological processing.

Post-graduate certification in DHH could be easier to access with reduced wait times after initial degree completion and more campus locations offering DHH programming. Without a comparative study, it is not possible to determine which Deaf education program best prepares teachers to instruct DHH students to acquire phonemic awareness and phonological processing. After reviewing participants' experiences in this study, there were differences in those who completed training via online classes and those who attended on-site classes. The on-site certification had a Deaf culture and ASL component which was absent in the online classes. Further study is required to determine the extent this may have influenced curriculum delivery and instructional methods used by teachers.

In-servicing of teachers and other educational support staff occurred during professional development days, scheduled meeting times, and was sometimes participant-initiated. This included formal training sessions and informal conversations with individual teachers to discuss specific issues. Participants reported teachers and support staff often required assistance with learning how to use adaptive equipment or to read audiograms. In-servicing of teachers was achieved through utilizing different

communication mediums. Through providing teachers with resources in-print and in electronic media, teachers could retain copies and access the material for future reference. For example, one participant produced a resource manual for her school board to loan to teachers about DHH education issues and instructional strategies. Such a manual may also be beneficial to other boards. However, it is not clear how teachers actually used it as a resource or how it informed their teaching practice. Using electronic communication also allowed the participants to respond quickly to teachers and answer concerns. Perhaps in-servicing of professional development could be digitally recorded for future referral. In addition, it may be useful to have one member of the intervention team be primarily responsible for fielding teacher inquiries and creating professional development workshops.

Limitations of the Study

There were several limitations to the present study. These limitations involve participant recruitment, data collection, and the individuality of the study itself. Each of these will be addressed subsequently.

Recruiting participants with experience teaching the specific subset of learners described in this study was challenging. The study required specialized educators with experience teaching a special category of learners. This narrowed the participant selection pool. The recruitment email was written for a teacher list-serve and I did not consider the school administration to be the initial point of contact. Subsequently, electronic and voice communications were exchanged with several principals who initially expressed interest in the study. Through writing an email specifically for the school administration, I would have prevented confusion and loss of recruitment time. After clearing individual school

board ethics, it was hoped teachers would be quickly accessed via email (GREB, 2011).

Participant recruitment became more productive when a principal forwarded his or her

email regarding the study to a more select group of teachers. Only the principal had

access to these teachers and knew of their skills in the area of teaching DHH students.

Data collection was limited by the duration of the study and the availability of the

participants. Although ethical clearance was granted for another school board, no

participants from this board were recruited within the data collection period. The

language used in the recruitment emails, Letter of Information, and Consent Form may

have created exclusionary barriers to the study. Communication with principals indicated

they were unclear about the level of specialization the classroom teacher was required to

have to participate in the study. In addition, several principals needed clarification of

linguistic terminology found in the contact information provided in the study. This

potentially may have prevented other principals and teachers from responding to

recruitment notices. The data collection procedure was structured on the idea that DHH

students were being taught literacy skills within an inclusive environment. This also

could have restricted possible respondents as the data revealed literacy skills were being

taught based on a RTI principle. Consequently, both time and participants were possibly

lost due to data collection methodology.

The main limitation of the study was the individuality of the study itself.

Although each participant was equally qualified to teach DHH children, they each did so

in individual ways. Indeed, each participant could be an examination within the study

itself. Also, the participants noted they often supported students who had additional

cognitive or learning disabilities. The participants reported this was an additional

teaching duty that was not part of their original DHH training and may not be expected of them in other situations. Instead, the participants lend their experiences into creating a deeper understanding of the instructional methodologies used to support DHH students within a mainstream classroom.

Conclusion

Using self-reported participant data, greater insight into interventional literacy instruction to support DHH students was gained. The study also revealed this instruction was influenced by participants' educational experience and their exposure to Deaf culture. This was an unexpected theme that the literature review did not develop. The flexibility of a qualitative study permitted the data to be analyzed critically regardless of the primary literature review. Flexibility during qualitative research is important to allow for unanticipated categories to be analyzed (Ospina, 2004).

Due to the limitations within the study, there are many possible avenues for future researchers to pursue. The pursuit of linguistic education within the Deaf community is distinctly different from that of the hearing world. There is a complexity within the Deaf community which the study did not properly address in the literature review. The influence of assistive technology, restorative technology, and hearing devices will interact with acquisition of phonemic awareness and phonological processing. How technology interacts and influences Deaf culture in relation to the persistence and continuation of ASL as a form of communication is an issue for future researchers.

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Appendix A

Letter of Information for Teachers

Faculty of Education, 511 Union Street, Kingston, Ontario, Canada, K7M 5R7

Letter of Information
"Instructing Students with Hearing Impairment in Literacy Development"

December 6, 2011

Dear Participant,

This research is being conducted by Patricia M. T. Kincaid, a Queen's graduate student, under the supervision of Dr. Derek H. Berg, in the Department of Education at Queen's University in Kingston, Ontario. This study has been granted clearance according to the recommended principles of Canadian ethics guidelines, and Queen's policies.

What is this study about? The purpose of this research is to explore your experience of instructing students with hearing impairment in a general classroom. This research intends to describe the literacy techniques you are using to support students with hearing impairment within inclusive classroom settings. The study will require approximately one hour of your time to participate in a semi-structured interview conducted by the researcher in the classroom when no students are present. The interview can be segmented into smaller interviews to accommodate your instructional and personal needs. During the interview, you may also share visual aids that help in your instruction of the hearing impaired student. The interview will be arranged after you read the Letter of Information and sign the Consent Form. The interviewer will then contact you via email or telephone to determine a suitable time to conduct the in-class interview. There are no known physical, psychological, economic, or social risks associated with this study.

Is my participation voluntary? Yes, your participation is voluntary. You are not obligated to answer any questions that you find objectionable or that make you feel uncomfortable. You may also withdraw from the study at any time with no effect on your standing in school and no information will be shared with employers or peers. You may request to remove all or part your responses to the extent possible at any time by contacting the researchers listed below.

What will happen to my responses? We will keep your responses confidential. Only the thesis committee will have access to this information as they will have the password to

the encrypted devices. The interview will be audiotaped using a digital device and the data stored on an encrypted USB key. The data will then be transcribed and stored onto a computer. This computer will be password protected with only the thesis committee having access to the code. An additional aspect of the study involves reproduction of visual aids (graphic organizers, KWL charts, curriculum resources etc.) that you are currently using to support your literacy instruction. Please note, any identify information regarding the students or the school will be removed from the reproduced visuals. Visual materials, including photographs and photocopies of instructional materials will have all identifying features removed to protect the identity of the participant, students, and school. The researcher will photocopy or photograph these images. No images of students will be taken or student work collected.

The data may also be published in professional journals or presented at conferences, but any such presentations will be of general findings and will never breach individual confidentiality. If the data from this study is used in a secondary study, your confidentiality is maintained and secured. As such, the findings from this study may be disseminated. Should you be interested, you may request a copy of the findings by contacting a member of the thesis committee through the information provided at the end of the Letter of Information. In keeping with Queen's policy, the data from this study will be kept for five years and then destroyed.

Will I be compensated for my participation? Yes, you will receive a $25.00 gift card to Chapters at the completion of your participation in this study.

What if I have concerns? Any questions about study participation may be directed to the researcher Patricia M. T. Kincaid, at p.kincaid@queensu.ca. or her supervisor Dr. Derek H. Berg at 613-533-6000, Ext. 77413; derek.berg@queensu.ca. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6081.

Appendix B

Letter of Consent for Teachers

Faculty of Education, 511 Union Street, Kingston, Ontario, Canada, K7M 5R7

December 6, 2011

Consent Form
"Instructing Students with Hearing Impairment in Literacy Development"

Name (please print clearly): _____

I have read the Letter of Information and have had any questions answered to my satisfaction. I understand that I will be participating in the study called "Instructing Students with Hearing Impairment in Literacy Development." I understand this means that I will be asked to participate in approximately one hour semi-structured interview conducted by the research investigator in the classroom when no students are present. The interview can be segmented into smaller interviews to accommodate my instructional and personal needs. During the interview, I may also share visual aids that help in my instruction of hearing impaired students. The research investigator will be responsible for collecting reproductions of visual aids (graphic organizers, KWL charts, etc.) that I am currently using in my instruction. I understand any identify information regarding the students or the school will be removed from the reproduced visuals.

I understand that my participation in this study is voluntary and I may withdraw at any time, without consequence. I may request the removal of all or part of my data upon withdrawal from the study by contacting either the research investigator or the supervisor at the contact information provided on the Letter of Consent. I understand that every effort will be made to maintain the confidentiality of the data now and in the future. Only the research investigator, Patricia M. T. Kincaid, and the thesis committee will have access to this data. The data may also be published in professional journals or presented at conferences, but any such presentations will be of general findings and will never breach individual confidentiality.

Any questions about study participation may be directed to Patricia M. T. Kincaid at p.kincaid@queensu.ca or her supervisor Dr. Berg at 533-6000, Ext. 77413;

derek.berg@queensu.ca. Any ethical concerns can be directed to the Chair of the General Research Ethics Board at 613-533-6081 or chair.GREB@queensu.ca.

Should I be interested, I am entitled to a copy of the findings. If I would like a copy of the findings of the study, I will provide an email or postal address in the space provided.

_____

_____

Signature: _____ Date: _____

Please sign one copy of this Consent Form and return to Patricia M. T. Kincaid. Retain the second copy for your records.

Appendix C

Sample Participant Recruitment Email

Sample Recruitment Email

Subject: Instructing Students with Hearing Impairment in Literacy Development

Hello,

I am a graduate student conducting interviews with primary teachers to investigate the visual instructional methods they use to help students with Hearing Impairments learn literacy skills.

Your participation in an individual semi-structured interview would be kept confidential to the extent possible and would require approximately one hour of your time. Your time would be compensated with a $25.00 gift card to Chapters. An additional aspect of the study involves reproduction of visual aids (graphic organizers, KWL charts, etc.) that you are currently using. Please note, any identify information regarding the students or the school will be removed from the reproduced visuals.

To participate in this study please contact me at:

p.kincaid@queensu.ca

This study is being supervised by Dr. Derek H. Berg and he can be contacted at 613-533-6000, Ext. 77413; derek.berg@queensu.ca. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at chair.GREB@queensu.ca or 613-533-6081.

Regards,

Patricia M. T. Kincaid

Master of Education Candidate

Queen's University, Faculty of Education, Kingston, Ontario

Appendix D

Semi-Structured Interview Questions/Probes

Semi-Structured Interview Questions/Probes

1.   Please describe your teaching qualifications and experience.

•   (i.e. Specialized Education course, workshops, Additional Qualifications)

2.   During the course of your teaching career, how many students with hearing loss do you think you have taught in your classroom (either identified or not)?

3.   What physical visual instructional methods are you using to supplement your literacy teaching (i.e. American Sign Language, Visual Phonics, and Cued Speech)?

4.   What types of additional visual materials are you using to supplement your literacy instruction for the students with hearing loss?

•   Where are these materials located in the classroom?

•   What type of information is displayed on these visual materials?

5.   How do you assess students with hearing loss for literacy learning?

6.   What types of curriculum materials are you using in your literacy program to teach reading skills to the students who are hearing loss?

•   If applicable, how did you modify the literacy program?

7.   Describe how your literacy instruction is adapted for the student with hearing loss.

•   How are you adapting your lesson plans or curriculum materials specifically to accommodate the learning needs of students with hearing loss during literacy instruction?

•   Please describe a student with hearing loss you have taught literacy skills. Give an example of an instructional technique.

8.   What do you use your visual instructional practices to specifically teach during your literacy lesson?

•   Is it used for a certain skill?

11.   What advice are you most often giving to classroom teachers?

12. What level of support are you most often giving (curriculum instruction, differentiated instructional methods, or assessment)?

13. Based upon your experience, what challenges are teachers facing in relation to supporting students with hearing loss in an inclusive classroom setting?

Artefact Collection

Teacher developed curriculum and other visual instructional materials will be sampled with all personal identifying features removed.

Appendix E

Speech Banana

"Speech Banana" indicates the types of sounds that may be heard at various hearing abilities.

"Degrees of Hearing Loss," by Genesis Framework, 2012, *All Ears Hearing Centers*. Copyright 2012.