Educators' Resource Guide

Supporting Students Who Are Deaf or Hard of Hearing

Manitoba 🦬

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Any websites referenced in this document are subject to change. Educators
are advised to preview and evaluate websites and online resources before
recommending them for student use.

This resource is available on the Manitoba Education website at
www.edu.gov.mb.ca/k12/specedu/.

Disponible en français.

Available in alternate formats upon request.

Contents

P R E F A C E

Purpose

Educators' Resource Guide: Supporting Students Who Are Deaf or Hard of Hearing provides basic information to support educational programming and to help ensure successful school experiences for students who are Deaf or hard of hearing (DHH). Teaching a student who is DHH can be a challenging and rewarding experience.

Audience

This resource has been developed for educators working with students who are DHH in Manitoba schools. The primary audience is classroom teachers, but other members of the support team (teachers of the DHH, educational assistants, administrators, resource teachers, counsellors, speech-language pathologists, audiologists, auditory-verbal therapists, American Sign Language (ASL)-English interpreters, ASL specialists, etc.) will find the information useful.

Background

Educators' Resource Guide reflects the collaborative efforts of parents, professionals, and community members from across the province of Manitoba. Committee members had a diverse range of skills and experiences in working with students who are DHH. The information in this guide reflects the range and diversity of services available to students who are DHH in Manitoba schools.

Document Organization

This document is organized into the following sections:

- Introduction
- Hearing Loss: This section describes how the ear works, how hearing loss occurs, and how testing reveals hearing loss. It also outlines the different types of hearing loss, as well as the variety of supports available.
- Identity: This section describes identity development and issues faced in the classroom by students who are DHH.

- Communication: This section provides information about the importance of language development and how to facilitate that development and provide training in communication skills for students who are DHH.

- Education: This section provides information about how to make classrooms more friendly and teaching practices more appropriate for students who are DHH.

- Appendices: A variety of additional charts and information sheets are provided in the appendices.

- Glossary: The glossary defines terms that have been printed in bold throughout the document. Glossary terms are printed in bold the first time they are used.

- Bibliography: The bibliography provides an overview of all of the sources consulted and cited in the development of this document.

Sidebars and Graphics

This document uses sidebars and a variety of graphics to support the reader.

 This icon indicates a key idea.

 This icon indicates a reference to the Appendices.

Term
definition
Terms included in the glossary are usually defined in the sidebar when first used if they are not explained in the main text.

Facts
and
quotes
Interesting facts and quotes are included as extra information.

 References to other Manitoba Education materials are provided.

 This icon indicates a handout.

Acknowledgements

Manitoba Education gratefully acknowledges the contributions of the following individuals who graciously shared their impressive depth and breadth of knowledge and experience in the development of *Educators' Resource Guide: Supporting Students Who Are Deaf or Hard of Hearing,* both the original 2009 edition and this revised edition.

This endeavour reflects the willingness of individuals holding diverse philosophies to put aside professional differences and collaborate in the best interest of students who are Deaf or hard of hearing (DHH).

> "Alone we can do so little; together we can do so much."
> – Helen Keller

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Introduction

Philosophy of Inclusion

Manitoba Education is committed to fostering inclusion for all people. *The Public Schools Amendment Act (Appropriate Educational Programming)* reflects Manitoba's commitment to providing all students with appropriate programming that supports student participation in both the academic and social life of schools.

Inclusion is a way of thinking and acting that allows every individual to feel accepted, valued, and safe. An inclusive community consciously evolves to meet the changing needs of its members. Through recognition and support, an inclusive community provides meaningful involvement and equal access to the benefits of citizenship.

In Manitoba, we embrace inclusion as a means of enhancing the well-being of every member of the community. By working together, we strengthen our capacity to provide the foundation for a richer future for all of us.

The Accessibility for Manitobans Act requires the development of accessibility standards and the promotion of barrier-free environments for Manitobans.

An Inclusive Environment

One exciting framework for making an inclusive environment and facilitating new ways to meet the needs of today's diverse student population is **universal design**. Universal design (UD) involves planning at the outset for the greatest accessibility and for the widest range of individuals so that retrofitting or adapting "after the fact" is not necessary. Seven guiding principles can be used as a framework to support planning and creating universally accessible learning environments:

■ equity
■ flexibility
■ simplicity
■ perceptible use
■ tolerance for error
■ comfort
■ appropriate space

The better the learning environment adheres to the principles, the more universally designed it is. Universal design is widely accepted as best practice in planning for all students.

There are a number of factors that need to be considered in making an inclusive environment for students who are DHH. The information in this resource will be helpful for teachers, professional staff, and parents* in understanding the following:

■ the student's hearing loss
■ the use of amplification and technology
■ Deaf culture and identity
■ the social, developmental, and educational implications of hearing loss
■ classroom programming, strategies, and considerations

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* In this document, the term *parents* refers to both parents and guardians and is used with the recognition that in some cases only one parent or guardian may be involved in a child's education.

Students who are DHH may receive educational programming

- within the context of the regular classroom in their neighbourhood school, supported by a variety of professionals
- at the Manitoba School for the Deaf

School-Based Teams

A school team, including parents, is established for each student. The school-based team can include the school administrator, resource teacher, counsellor, and classroom teacher. Students with a hearing loss may require the support of additional team members, depending on the students' individual needs. These may include the following:

- an **educational assistant,** an **ASL-English interpreter,** a **signer,** or a **computerized notetaker**
- a **teacher of the DHH**
- an **auditory-verbal therapist (Listening and Spoken Language Specialist)**
- a **speech-language pathologist**
- an **ASL specialist** or a Deaf ASL instructor
- an **audiologist**
- a number of other clinicians, including a reading clinician, a social worker, a **physiotherapist,** and/or an **occupational therapist**
- a **psychologist,** a psychiatrist, and/or other health personnel
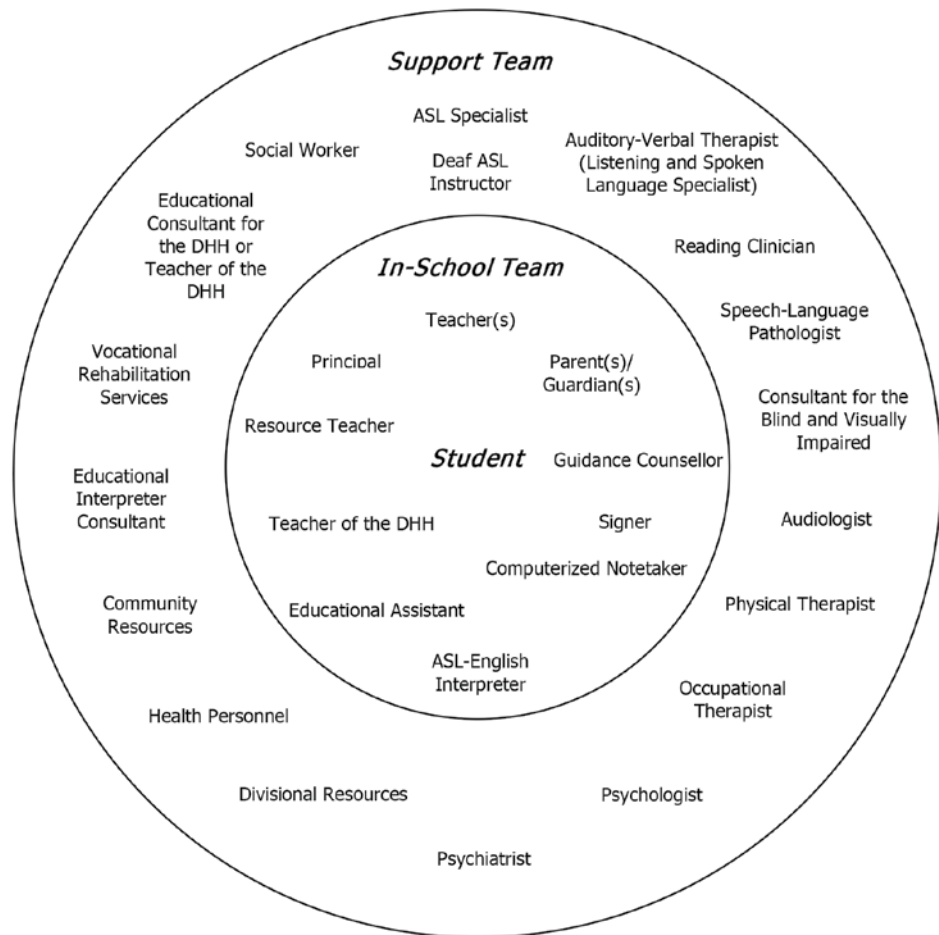- school division and community resources

The team is important in helping schools develop exemplary practice in inclusion and in promoting the planning, development, and monitoring of **individual education plans (IEPs)** for students in all aspects of their school life. In cases where students require an IEP, a member of the school-based team is generally designated as the case manager. The following diagram identifies some of the personnel who may be part of the IEP team.

Refer to the Glossary for definitions of bolded terms.

Acronyms in Deaf Education

ASL	American Sign Language
AVT	auditory-verbal therapy
CN	computerized notetaker
DHH	Deaf or hard of hearing *or* Deaf and hard of hearing
EIC	educational interpreting consultant
LSLS	Listening and Spoken Language Specialist
SLP	speech-language pathologist
TDHH	teacher of the DHH

Figure 1   **The Team**

Support Team

ASL Specialist

Social Worker   Deaf ASL   Auditory-Verbal Therapist
                    Instructor   (Listening and Spoken
Educational   Language Specialist)
Consultant for
the DHH or   Reading Clinician
Teacher of the   **In-School Team**
DHH   Speech-Language
                   Teacher(s)   Pathologist
Vocational
Rehabilitation   Principal   Parent(s)/
Services   Guardian(s)   Consultant for the
                   Resource Teacher   Blind and Visually
                                                    Impaired
Educational   **Student**   Guidance Counsellor
Interpreter
Consultant   Teacher of the DHH   Signer   Audiologist

                          Computerized Notetaker

Community   Educational Assistant   Physical Therapist
Resources
                   ASL-English
                   Interpreter   Occupational
Health Personnel   Therapist

Divisional Resources   Psychologist

Psychiatrist

Collaboration and flexibility among team members is essential in determining the best possible programming for the individual student. Establishing good communication with students, families, and community service providers will foster the student's social, emotional, communicative, and educational development.

Manitoba Education Supports

School teams can access supports to assist them in programming for students who are DHH by making a referral to the Deaf and Hard of Hearing Services Unit in the Inclusion Support Branch. Information on the services available and a link to the referral form are available at www.edu.gov.mb.ca/k12/specedu/dhh/.

H E A R I N G   L O S S

HEARING LOSS

Introduction

This section contains information about some of the medical aspects of hearing and hearing loss and information about audiology. It explains the following:

- sound
- how the ear works
- audiology and the audiogram
- the types and degrees of hearing loss
- the effects of hearing loss
- how to meet the needs of students with hearing loss

Questions about a student's hearing loss can be answered by their audiologist. A teacher of the Deaf and hard of hearing, auditory-verbal therapist, and/or speech-language pathologist will also be able to provide more information.
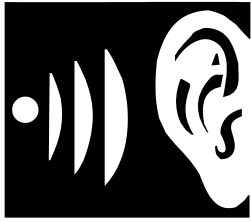
Hearing

Sound

Sound is an invisible vibration that begins from movement. Sound is measured in both intensity (loudness) and frequency (pitch).

Intensity is measured in decibels (dB). Frequency is measured in hertz (Hz). Most sounds are made up of a range of different frequencies.

An example of a high frequency, or high-pitched sound, is the noise made by a whistle. An example of a low frequency, or low-pitched sound, is the noise made by a big drum.
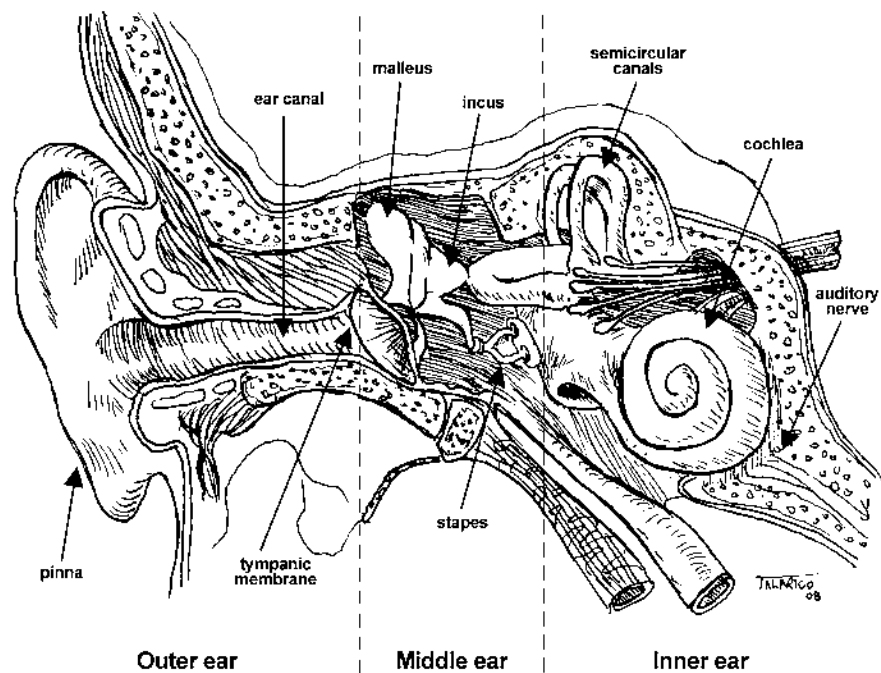
Speech is usually a mix of high, middle, and low frequency sounds. Consonant sounds, like /p/, /k/, and /s/, tend to be higher in frequency than some vowel sounds, like /aa/ as in *part*.

The Ear

The ear has two main functions. It receives sound and converts it into signals that the brain can understand. It also helps us to balance. The two functions are closely connected.

| Figure 2 | **The Ear** |

© 2008 Sean Talarico. Adapted with permission.

The ear is divided into three main sections:

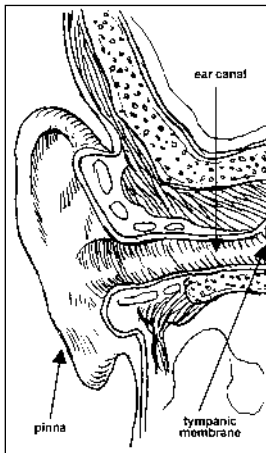- the outer ear
- the middle ear
- the inner ear

Sound passes through all three sections of the ear before it goes to the brain. The brain interprets the sound and tells us what we are hearing. It tells us if we are hearing music, noise, a voice, a car horn, a dog, or other sounds.

The Outer Ear

Sound goes into the outer ear. The part of the outer ear that we can see is called the pinna.

The outer ear picks up sound waves and directs the sound down the ear canal to the eardrum.
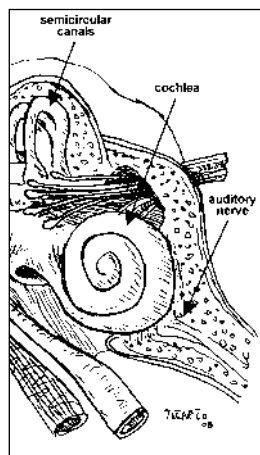
The eardrum (tympanic membrane) is a thin membrane stretched over the end of the ear canal that separates the outer ear and the middle ear. When sound hits the eardrum, it begins to vibrate much like the membrane of a drum when it is struck with a drumstick.

The outer ear

The Middle Ear

The middle ear contains the three smallest bones in the body, each about the size of a grain of rice. Together these bones are called the ossicles. Individually, they are called the malleus (hammer), the incus (anvil), and the stapes (stirrup).

This chain of bones is attached to the eardrum on one end and the inner ear on the other end. The ossicles form a lever mechanism that conducts sounds from the eardrum to the inner ear.

The middle ear

The Inner Ear

The inner ear is housed in the bone of the skull. This part of the ear contains the semicircular canals, the cochlea, and the auditory (hearing) nerve.

The semicircular canals are fluid-filled bony structures that are responsible for balance. When you feel dizzy on a fair ride, this is because the fluid in the semicircular canals has been disturbed.

The inner ear

The cochlea is shaped like a snail and is filled with fluid. It is lined with thousands of tiny nerve endings called hair cells. These hair cells are tuned somewhat like the keys on a piano. Some of the hair cells respond to low-pitched sounds, and some respond to high-pitched sounds.

These hair cells are connected to the auditory nerve that connects the cochlea to the brain.

Audiology

Audiology is the medical term for the study and measurement of hearing and hearing loss.

An **audiologist** is a professional who is qualified to assess hearing loss and to recommend and fit amplification systems (e.g., hearing aids, wireless audio systems, cochlear implants).

An annual hearing assessment is recommended for students who are DHH because not all hearing losses are stable.

The Audiogram

The **audiogram** is a graph that represents a person's responses to sound. It is used to document the softest sound a person can detect at a variety of different frequencies (pitches).

Frequency

The frequency or pitch of sound is shown by the numbers across the top of the audiogram. Low pitches are on the left-hand side of the graph and high pitches are on the right, somewhat like the keys of a piano, which range from low pitches on one end of the keyboard to high pitches on the other end. The whistle of a bird usually has a high pitch; the growl of a dog has a low pitch.

The frequencies included on an audiogram are chosen because they are important for understanding speech.

Different speech sounds have different pitches, so it is important to know how well a person hears across the frequency range. A good example of different frequencies is the word *moose*. The /m/ sound is a low-frequency sound, the /oo/ sound is a middle-frequency sound, and the /s/ sound is a high-frequency sound. In order to hear the word completely, a person must have appropriate levels of hearing at low, middle, and high frequencies.

Hearing tests occur in an ideal, soundproof listening environment. Consult an audiologist to determine what the student can and cannot hear in the real world.

Intensity

The intensity or loudness of sound is shown by the numbers down the side of the audiogram. The small numbers at the top are soft sounds (–10, 0, 10 decibels [dB]), and the large numbers at the bottom are loud sounds (90, 100, 110 dB).

With a complete audiogram, an audiologist can determine the type, degree, and configuration (or shape) of the hearing loss.

Examples of Sounds on the Audiogram

The figure on the next page, "Audiogram," shows the pitch and loudness of several environmental sounds as well as typical speech sounds. Examples of sounds plotted on the audiogram include the following:

- Water dripping is a very low pitch (185 Hz) quiet sound (15 dB).
- Birds chirping is a very high pitch (6000 Hz) quiet sound (5 dB).
- People talking at a conversational level (i.e., all speech sounds) crosses all pitches at low to mid volumes (40 to 60 dB).
- A piano playing is a mid-pitch (1000 Hz) loud (80 dB) sound.
- An airplane is a high pitch (4000 Hz) extremely loud (120 dB) sound.

The shape the speech sounds make on this audiogram is commonly called the *speech banana*. The speech banana represents the area of pitch and loudness in which the majority of speech sounds will occur when a person is talking in a normal conversational voice.

Figure 3   **Audiogram**

Figure 3   Audiogram

Frequency (Pitch) in Hertz (Hz)

Low — → — High

125   250   500   1000   2000   4000   8000 Hz

Soft / Loud

Loudness in Decibels (dB)

Water Dripping, Rustling Leaves, Birds Chirping, Whispering, Talking, Watch, Crying, Vacuuming, Dog Barking, Piano, Telephone, Lawn Mower, Motorcycle, Jackhammer, Band, Airplane

Normal Hearing, Mild Hearing Loss, Moderate Hearing Loss, Moderately Severe Hearing Loss, Severe Hearing Loss, Profound Hearing Loss

Hearing Loss

Types of Hearing Loss

Conductive Hearing Loss

A **conductive hearing loss** occurs when one or more of the structures of the outer or middle ear are not working properly. For example, conductive hearing loss may be caused by the following conditions:

- wax buildup in the ear canal
- a hole in the eardrum
- fluid in the middle ear
- problems with the bones of the middle ear

Having a conductive hearing loss is like wearing earplugs: you only hear loud sounds. Most types of conductive hearing loss can be medically corrected.

Otitis media is a medical term that refers to middle ear infections or inflammation of the middle ear. Fluid in the middle ear is usually, but not always, found with this condition. This fluid may be watery or like mucus, and may or may not be associated with infection.

Otitis media is very common in children, especially young children, and is the most common cause of conductive hearing loss.

The symptoms of otitis media may include the following:

- fever
- ear pulling
- irritability
- inattentiveness
- earaches
- difficulty hearing in one or both ears

Frequent otitis media is cause for concern because of the long-term effects on a person's ability to listen, process sounds, communicate, and socialize.

Some individuals who have permanent, sensorineural hearing loss (see next page) also get otitis media, resulting in additional loss of hearing sensitivity. It is advisable to check young children's hearing after they have been treated for otitis media.

Sensorineural Hearing Loss

A **sensorineural hearing loss** may result from problems in the following:

- the cochlea
- the auditory nerve
- the hearing centres of the brain

Damage to the hair cells in the cochlea is the most common reason for sensorineural hearing loss. If damaged, the hair cells cannot detect sounds.

Most types of sensorineural hearing loss are permanent and cannot be corrected by surgery or medication.

Mixed Hearing Loss

A hearing loss is classified as **mixed** when both conductive and sensorineural hearing loss are present. For example, someone with a permanent sensorineural hearing loss with a middle ear infection may have additional hearing loss (called "conductive overlay"). After the ear infection clears, and the conductive overlay disappears, the person would be said to have only a sensorineural hearing loss.

Unilateral Hearing Loss

If only one ear is affected with a hearing loss, it is referred to as a **unilateral hearing loss**.

A review of the literature indicates that some students with unilateral hearing loss may be at risk for speech and language delays and/or academic challenges. It is not known at precisely what age the unilateral hearing loss has an impact. While some students will never exhibit an effect from the unilateral hearing loss, others may experience some challenges.

Bilateral Hearing Loss

When both ears are affected, it is known as **bilateral hearing loss**.

Progressive Hearing Loss

A **progressive hearing loss** is one where, over time, the hearing becomes progressively worse in one or both ears. Some individuals have risk factors for late onset or progressive hearing loss (e.g., prolonged mechanical ventilation at birth, congenital diaphragmatic hernias, large vestibular aqueducts, certain syndromes).

See Appendix A for information on potential impacts of a unilateral hearing loss.

Children with unilateral hearing loss "have more difficulty in academic situations or in school than children with normal hearing. They are 10 times more likely to repeat a grade, and five times more likely to need additional educational resources" (Bowers).

> An annual hearing assessment is recommended for students who are DHH because not all hearing losses are stable. An annual review helps the school team detect changes in hearing acuity and adjust hearing aids as needed.

Hearing Levels

are the softest sounds people can hear.

Please refer to Appendix A for information regarding the impact of these hearing losses.

Degree of Hearing Loss

The level of a person's hearing loss can be described in two ways:

- as a decibel (dB) **hearing level**
- as slight, mild, moderate, moderately severe, severe, or profound hearing loss

Hearing loss is not described as a percentage (e.g., 60 percent Deaf).

The chart below shows the terms used to describe hearing levels and the decibel ranges that they refer to:

| Figure 4 | **Audiological Evaluation** |
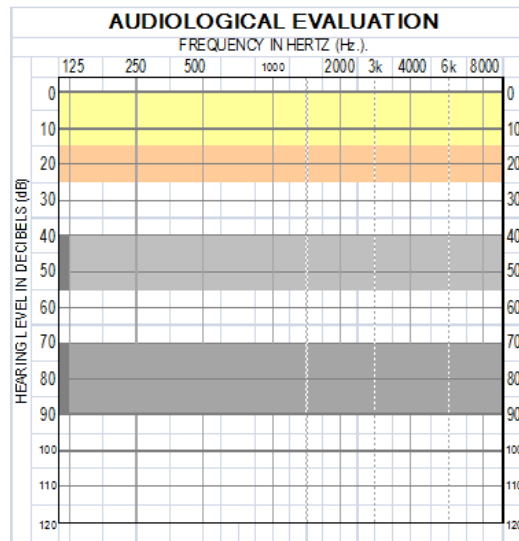
Classification of Degree of Loss

0–15 dB	Normal Hearing for Child
16–25 dB	Slight Loss
26–40 dB	Mild Loss
41–55 dB	Moderate Loss
56–70 dB	Moderately Severe Loss
71–90 dB	Severe Loss
>90 dB	Profound Loss

An illustration of hearing loss is available in Appendix B.

Examples of listening with a hearing loss are available online. Search "What a hearing loss sounds like" in the search engine of your choice. For example, the following websites provide simulations of hearing loss:

- www.hearinglikeme.com/facts/what-hearing-loss/hearing-loss-simulator-understanding-mild-and-moderate-hearing-loss
- www.hear-the-world.com/en/hearing-and-hearing-loss/hearing-loss-what-it-sounds-like.html

Residual hearing

is the amount of usable hearing.

Most individuals with a hearing loss will have some amount of **residual hearing**. The audiologist, SLP, TDHH, or AV therapist will be able to give more information about a person's degree of hearing loss and can explain the sounds that the person may hear and the sounds that the person may not hear.

Deaf, Hard of Hearing, and Deafened

Students who have a hearing loss are referred to as *hard of hearing* or *Deaf* according to their communication skills and cultural affiliation. Generally, students who use ASL (American Sign Language) and who have identified culturally with members of the Deaf community are considered *Deaf*. (The word is capitalized to indicate a distinct cultural group similar to the capitalization of English, Spanish, or Hebrew.) Students who have a hearing loss but do not have a cultural affiliation with the Deaf community are generally referred to as students who are *hard of hearing*.

Individuals who had hearing and have subsequently lost their hearing, through illness or accident, are referred to as *deafened*. These individuals choose either Deaf or hard of hearing support organizations, based on the degree of their acquired hearing loss.

Effects of Hearing Loss on Speech and Language without Intervention

A minimal hearing loss may not be a problem for an adult, but it can seriously affect the overall development of a person who is in the process of learning language, developing communication skills, and acquiring knowledge. In general, the more significant the loss, the greater the difficulty.

(Irwin)

Students with **minimal or slight hearing loss or unilateral hearing loss** may

- miss some consonants
- experience mild difficulty with auditory language learning
- experience difficulty listening at a distance or in noisy situations

Students with **mild hearing loss** may

- miss quiet speech sounds
- experience difficulty with auditory learning
- experience speech/language delays
- appear to be inattentive

Students with **moderate hearing loss** may

- hear almost no speech sounds at normal levels

- make speech sound errors
- experience language delays
- experience learning difficulties related to language delays
- appear to be inattentive
- need to be less than two metres away from speaker for best listening distance

Students with **severe hearing loss** may

- hear no speech sounds at normal levels
- speak, but their speech may be difficult to understand
- experience language delays
- experience learning difficulties related to language delays
- appear to be inattentive to verbal communication (may not realize that speaker is speaking)

Students with **profound hearing loss** may

- hear no speech or other sounds
- experience extreme difficulty understanding speech
- produce little or no verbal language
- experience learning difficulties related to language delays
- learn by visual cues or ASL
- appear to be inattentive to verbal communication (may not realize that speaker is speaking)

Amplification

Amplification devices such as hearing aids, cochlear implants (CIs), and wireless audio systems help to meet the needs of students with hearing loss. The goal of all hearing technology is to enhance the reception of speech.

The technology for a student is chosen, based on individual needs and school team observations, by the audiologist in consultation with the parents. Factors including the type of hearing loss, the degree of hearing loss, and the size and shape of the ears are considered in the decision-making process. When amplification has been recommended, consistent use is important.
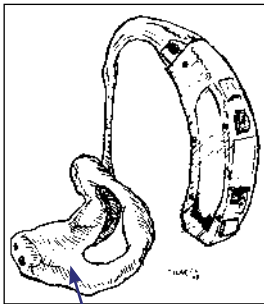
Information about the use and care of hearing aids, CIs, and wireless audio systems should be provided to the student's support team. As technology changes, ongoing information sharing is needed to support

each student. For example, if a student gets new hearing aids, the wireless audio system may require an upgrade.

> Hearing technology should be checked daily, as young students often cannot report malfunctions in their amplification. Management of amplification is the student's responsibility, although support from the school team may be required in Early Years. See page 20 for information on listening checks.

Hearing aids

Hearing Aids

Hearing aids are electronic devices that amplify sound. Speech and background noise are amplified by a hearing aid.

Hearing aids work best in a quiet listening situation where the distance between the person speaking and the student is six feet or less. As distance and background noise increase, the benefit provided by a hearing aid is greatly decreased.

It is important to keep in mind that hearing aids do not restore normal hearing. They amplify all sounds. They need to be kept in good working condition and worn consistently. A daily listening check is needed to ensure that hearing aids are working properly. Refer to Listening Check on page 21.

Earmold

is the part of a hearing aid that is custom-made to fit into the outer ear.

Bone-Anchored Implants (BAI)

Bone conduction hearing aids are often used in cases where someone has a malformed ear with no ear canal, or has chronic ear infections that do not allow for the use of traditional hearing aids with **earmolds**. The bone-anchored implant is surgically implanted and conducts sound to the ear through direct bone vibration. The BAI consists of a small titanium implant, an abutment, and a sound processor.

Figure 5	**Bone-anchored implant**

The sound processor can easily be snapped in and out of the abutment but allows for secure attachment.
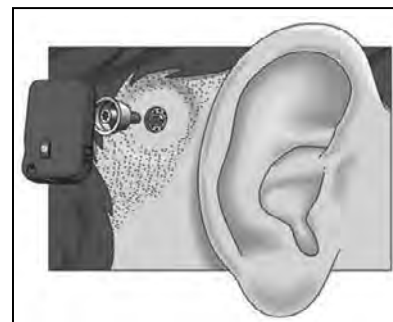
The surgery is very minor and is often done under local anaesthesia. There is a period of three to six months following surgery during which the sound processor cannot be worn, in order to allow the implant to be integrated with the bone of the skull. It is important that the area surrounding the implant is kept clean to avoid infection. This can be done using soap and water or saline wipes (baby wipes).

Implantation is not recommended for children under the age of five because of the thickness and development of the skull. A soft elastic headband with a connector for the sound processor can be used for these children until they are able to undergo surgery. The band can be adjusted to the child's head size.

Figure 6	**Softband**

Cochlear Implants

A cochlear implant (CI) is a device that is surgically implanted into the inner ear and that stimulates the hearing or auditory nerve directly, bypassing the damaged cochlea. It can provide useful hearing for individuals who have a severe to profound sensorineural hearing loss and who receive limited benefit from hearing aids. A CI will not restore normal hearing, but it will greatly improve access to sound.

Components

There are two components of a CI: an internal device and an external device.

The internal device consists of a magnet, a receiver, and a band of electrodes.

■ During surgery, an incision is made behind the ear, and the magnet and receiver are secured in place under the skin.

■ A hole is drilled into the inner ear and the band of electrodes is inserted into the cochlea.

■ The skin is then stitched and the implant remains under the scalp of the individual.

The external device consists of a microphone, a speech processor, a transmitter, and batteries.

■ The microphone picks up sound, which is then converted to an electric signal by the speech processor.

■ The transmitter sends the signal through the scalp to the internal device using radio frequency.

■ When the signal reaches the electrodes, they send out a small electric current that stimulates the auditory nerve and is interpreted by the brain as sound.
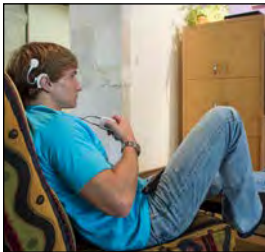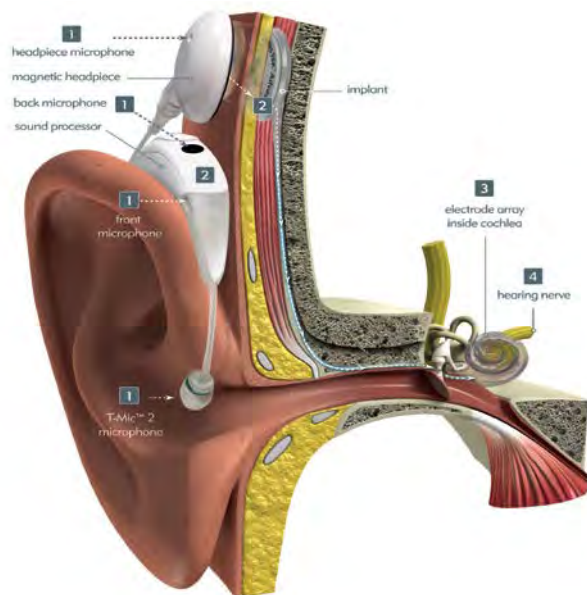

Cochlear implant
© 2019, provided courtesy of Advanced Bionics, LLC.

| Figure 7 | **How the processor couples, internal/external** |

© 2019, provided courtesy of Advanced Bionics, LLC.

Candidacy

Not all individuals with hearing loss are candidates for CIs. Any decisions regarding candidacy are discussed by the cochlear implant team.

Bimodal Hearing/Bilateral Implantation

Individuals with CIs often wear a hearing aid in the opposite ear. This is known as **bimodal** hearing. For many of these people, a hearing aid will provide only low frequency information, but this is information that a CI does not always pick up. The hearing aid and CI work together to provide as much speech information as possible.

It is also becoming more common to receive bilateral CIs, or one in each ear. **Bilateral implantation** can provide advantages in sound localization and speech discrimination in noise. The candidacy criteria remain the same for bilateral implantation as for single-sided surgery.

Acoustical Issues within the Classroom

Understanding speech in noisy environments can be difficult for any student, but for a student with hearing loss, it is even more challenging. Students need access to speech to develop their listening, language, and learning skills. Background noise, distance from the person speaking, and reverberation (echo) are common obstacles that significantly reduce the student's access to crucial speech information. Although today's advanced hearing aids and CIs can improve the quality, audibility, and clarity of the speech signal, they cannot remove all obstacles to speech understanding.

Students with hearing loss, even a mild hearing loss, may not express their inability to understand family members or teachers. They may not even be aware that they missed a question or misunderstood directions. If they are young and still learning language, they may be unable to tell when speech is unclear or buried in background noise. Students with hearing loss, and sometimes students with normal hearing, demonstrate difficulty in understanding speech when there is background noise, increased distance between the speaker and the student, and/or reverberation or echoes.

Noise

Ambient noise

is background noise, which competes with the main speech signal.

(Colorado School for the Deaf and Blind)

Ambient noise is present in most listening environments including classrooms. Hearing aids and CIs cannot selectively amplify only the speaker's voice: they also pick up background sounds. In many difficult and noisy situations, hearing aids and CIs alone cannot make the speaker's voice clearer or even louder. With background noise present, the loudness level of the speech signal may be barely above, and often may be lower, than the loudness level of the noise.

The comparison of speech and noise levels is referred to as the **signal-to-noise ratio** (SNR) and it represents the difference in loudness between the primary signal (e.g., a teacher's voice) and the background

noise. A student with a hearing loss needs the speech signal to be substantially louder than the background noise—a higher SNR is required—even higher than the level required by his or her hearing peer in the same situation. Amplification set at +15 decibels helps the student to hear the teacher's voice in a noisy setting.

Distance

A student with a hearing loss has a reduced hearing range compared to a student with normal hearing. This hearing range can be referred to as a "listening bubble" (Anderson, *ELF*). As distance from the speaker increases (e.g., when listening to someone speaking from another room), loudness decreases. For the student with a hearing loss, distance becomes an obstacle to understanding speech. The greater the distance between the speaker and the listener, the less intense the speech signal becomes. This makes it more difficult for the listener to hear properly, since background noise often remains the same.

Figure 8	**Distance-Loudness Relationship***
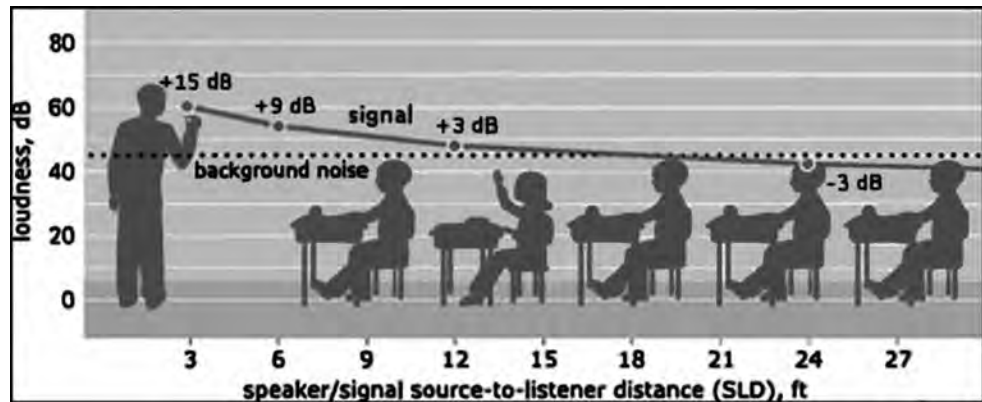
* Source: The Institute for Enhanced Classroom Hearing. "Problems: Poor Acoustics." www.classroomhearing.org/acoustics.html. Accessed 27 Nov. 2008. Reproduced with permission.

Research has shown that a student should be within one to two metres of the speaker for maximum speech understanding. This is not always possible to achieve either in the classroom or at home.

Be inside your student's listening bubble!

Reverberation

Another obstacle to speech understanding is reverberation or echo. When sound "bounces" off a surface, it can actually mask, or muffle, the main signal. It can reduce the clarity of speech, decrease the signal-to-noise ratio, and make speech more difficult to understand.

Using ceiling tiles, small carpeted areas, and muffling devices on the feet of chairs improves acoustic conditions in the classroom.

Personal and Soundfield Wireless Audio Systems

As mentioned earlier, distance, background noise, and reverberation make hearing difficult in a classroom. Personal or soundfield/classroom wireless audio systems can be used in addition to the hearing aid(s) or CI(s) to help overcome these factors and make communication easier.

Personal FM System

- A **personal wireless audio system** uses a transmitter, microphone, and receivers to send the teacher's voice to the student's hearing aid(s) or CI(s) by either FM or digital (similar to cordless phones, WiFi, etc.) wireless radio transmission signals. The teacher wears a microphone and transmitter. The receivers may be integrated into the student's amplification equipment or attached externally through an adapter called an AI boot or audio shoe. The student hears the teacher as if the teacher were standing right next to them, overcoming the problems of distance and background noise. Daily listening checks of the audio system are needed. Refer to Daily Care and Listening Checks on page 21.

Soundfield Systems

These systems increase the size of your student's listening bubble.

- **Soundfield/classroom wireless audio systems** use a microphone and transmitter to send the teacher's voice to speakers in the classroom. Students with mild hearing loss or unilateral hearing loss benefit from these systems because the teacher's voice is heard equally throughout the classroom and is louder than the background noise. Soundfield systems use an FM, digital, or infrared (sound via light) transmission signal.

A soundfield system and a personal audio system can be linked to work together if both are needed in the same classroom. These systems can also be connected through a cable or via a streamer (e.g., Bluetooth) to other technologies (e.g., computer, television, cell phone, tablet) to provide a more direct sound signal.

The audiologist will select the correct hearing aids or CI and wireless audio system for the student. The audiologist, TDHH, or AV therapist can provide support for the daily use of the hearing aids, CI, and the personal or soundfield audio system.

Public venues such as theatres, churches, or museums may provide headsets that amplify the sound through an FM, a digital, or an infrared system. Alternately, some venues use an induction loop system. An induction loop wire installed in the venue connects to the speaker's microphone. The microphone signal creates an electromagnetic field in the room that can be detected by hearing aids that are set to receive the signal. Students may encounter these systems when they attend plays or concerts.

Care of Hearing Aids, Cochlear Implants, and Wireless Audio Systems

It is important that hearing aids, CI processors, and wireless audio systems are kept in good working order to ensure the student has optimum access to auditory input throughout the day. Daily maintenance, system checks, troubleshooting, and listening checks are recommended. See page 21 for a step-by-step guide for performing daily care and listening checks.

Care and Maintenance

Systems should be kept clean, dry, and away from heat sources. They can be worn all day during sports and play, but care must be taken not to drop them on hard surfaces during handling or cleaning.

Over time, students learn to independently manage their amplification needs, including care. In the Early Years, students may require assistance. Individual education plan (IEP) goals regarding use and care of equipment are available on page 78.

To care for a hearing aid, a listening tube or stethoset, a clean cloth, a battery tester, and an earmold blower are required.

To check a CI processor, specific equipment from the manufacturer (headphones, a specialized adapter) are required, as well as a clean cloth and battery tester.

It is recommended that teachers, educational assistants, or other appropriate school personnel perform daily listening checks of the amplification equipment and troubleshoot problems as appropriate. Staff should become familiar with how the equipment sounds when it is functioning optimally so that they can recognize when a problem occurs.

> Care and cleaning recommendations and troubleshooting guides for hearing aids, cochlear implants, and amplification equipment are available online on the manufacturer's website. The audiologist, TDHH, or AV therapist can provide printed copies or website addresses.

Assign someone to maintain the system and ensure that it is working acoustically.

Stethoset, battery tester, and earmold blower

📄 Daily Care and Listening Checks

Hearing Aid Care	Cochlear Implant Care	Personal System Care	Listening Check
1. Test the battery with a battery tester. 2. Have a supply of spare batteries and replace as needed. Be aware that hearing aid batteries come in different sizes. 3. Do a listening check (see last column). 4. If changing battery does not restore or improve the sound signal, the cause may be condensation or wax/debris in the earmold/tubing. 5. Remove the earmold from the hearing aid. 6. Use the earmold blower to force air through the earmold tubing. 7. Wash the earmold in warm water and mild hand soap to remove wax or debris. 8. Rinse the earmold in warm water and dry well. 9. Be sure no water is in the tubing (use earmold blower). 10. Reattach the earmold to the hearing aid.	1. Test the batteries with a battery tester. 2. Check cables for wear, and replace if broken/worn. 3. Wipe CI with a dry, non-abrasive cloth if exposed to high levels of humidity or excessive perspiration. 4. Clean and replace microphone covers regularly.	1. Make sure the transmitter and receivers are on the same channel. 2. Use only rechargeable batteries. 3. Ensure that system is charged nightly. 4. Avoid twisting/tying/pinching the teacher microphone transmitter cord. 5. Store boots/receivers in a secure place when not in use.	**Hearing Aid** Use the stethoset to listen to the hearing aid. **Cochlear Implant** Use specialized equipment provided by manufacturer. 1. Listen to the system while saying the following Ling 6 sounds: /ah/, /ee/, /oo/, /sh/, /sss/, and /mmm/. 2. Listen to the sound quality. Are all sounds clear and accessible? If not, check equipment as per care columns. 3. If problems persist, contact audiologist, TDHH, or AV therapist. 4. Now attach audio boot and repeat steps above. 5. Present Ling 6 sounds to student in random order and ask them to repeat (to establish which sounds the student can hear). See next page for steps.
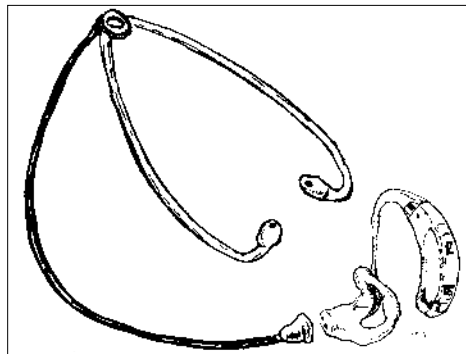
Stethoset with hearing aid and earmold
© 2008 Sean Talarico. Used with permission.

Ling 6 Sound Test and Listening Checks

The Ling 6 sound test, developed by Dr. Daniel Ling, is a simple screening tool that is used to check if a student has auditory access to the full range of speech sounds and to detect any changes in a student's hearing. It can also be used to check if the student's amplification equipment is functioning appropriately. Students are asked to repeat six different sounds that represent speech sounds from low to high pitch (frequency). These sounds are as follows:

Ling 6 Sound	As in the Word	Frequency of the Sound
m	mom	very low frequency
oo	boo	low frequency
ee	bee	some low frequency
ah	car	mid-frequency
sh	ship	moderately high frequency
s	mitts	very high frequency

This test or listening check should be completed with the student on a daily basis. Regularly performing the Ling 6 sound test will ensure any problems with the student's auditory access or with the amplification are identified early.

How to conduct the test:

1. Find a quiet environment.
2. Remove the student's amplification equipment and ensure it is working appropriately (conduct a listening check).
3. Test each ear separately. Put the amplification on the student's right ear.
4. Stand or sit 3 feet away from the student and ensure the student cannot see your face for visual cues (sit behind them or cover your mouth).
5. Say each of the following sounds one at a time with irregular pauses between each: /ah/, /ee/, /oo/, /mm/, /shh/, /ss/. Present the sounds in random order at a normal conversational level. Say each sound in the same length of time (so one is not longer than another) and without using any changes in pitch. After you present a sound, the student should indicate they have heard it by raising their hand or pointing to a visual representation of the sound or repeating the sound.
6. Record if the student is able to hear and, in time, identify each of the sounds. If a student is not able to respond to one or more of the sounds, this may indicate an ear infection or a change in hearing. Try saying the sounds closer or louder. If the student still cannot access the sounds and you cannot determine the cause, it is best to inform the student's parents, and the audiologist or doctor may need to be consulted.
7. Remove the amplification from the right ear, and put the appropriate amplification on the left ear. Test the left ear.

8. When finished, put the student's amplification on both ears, ensuring both sides are turned on and at the appropriate settings.

Your TDHH or AV therapist should model the process, and then observe to ensure you are not providing the student with additional clues about the sounds.

Assistive Technology

Advances in technology have greatly improved access to communication for people who are DHH. A variety of devices and technology can be used to enhance auditory or visual communication in all aspects of life. These include the following:

■   technology to enhance auditory communication—assistive listening devices (ALDs)

   ■   FM, digital, infrared, induction loop systems (Please see page 19 for further information.)

   ■   Bluetooth connections to televisions, cell phones, tablets, mp3 players, computers, et cetera

   ■   amplified alarm clocks, fire alarms, and telephones, and portable phone amplifiers

■   technology to enhance visual communication

   ■   captioning—on television, DVDs, online (e.g., YouTube videos), and in movie theatres (e.g., CaptiView device)

   ■   computerized notetaking, computer-assisted real-time transcription or communication access real-time translation (CART), notetaking services (e.g., TypeWell, C-Print)—live translation of the spoken word into English (See pages 109 to 111.)

   ■   speech-to-text apps and software

   ■   email, texting, video chat

   ■   video relay service—a service that allows people who use ASL to communicate through an interpreter with those who do not use ASL (The interpreter communicates with the person who is DHH via video and with the person who does not use ASL via phone.)

   ■   teletypewriting devices (TTYs)—used in the past, to provide communication between land-line phones via text communication—rarely used now due to the prevalence of cell phones and access to texting, email, and video chat—telephones with captioning capability are also now available

- alerting devices
  - vibrating watches, alarm clocks with loud sounds/flashing lights/bed or pillow vibrators
  - flashing light smoke detectors/CO2 alarms/motion detectors
  - flashing lights which indicate doorbells, knocks at the door, timers, telephones, and the baby cry monitor
  - flashing lights on cell phones to indicate a message has been received
- hearing ear dogs
  - though not a "technology," included here as they are trained to alert a person who is Deaf to a variety of sounds in their environment

For detailed information regarding these technologies, please consult your audiologist, TDHH, AV therapist, or ASL specialist. These technologies are available for purchase online, through some hearing aid centres, and through Deaf Centre Manitoba (which partners with the Canadian Hearing Society).

Students who are DHH and their families should be made aware of the variety of technologies available to them. Use of these technologies will help to foster student independence and equitable access to communication.

IDENTITY

IDENTITY

Introduction

This section explains identity development and issues faced by students who are Deaf or hard of hearing.

Students feel welcome and develop a sense of belonging when the teacher provides opportunities for interacting, sharing personal information, and building connections with others. The teacher can help students feel comfortable in the classroom by establishing effective communication.

> "The importance of building self-esteem in children who are deaf/hh is directly related to mental health, success in school, and ultimately success in life."
> (Janet DesGeorges, mother of a child who is Deaf)

Identity Development

Identity, or the representation of the self, is developed over time. Many factors contribute to the way students develop their identities: two important ones are their feelings and the feedback they receive from others. Communication (language) is also key in identity development. As students grow, they learn what it means to be DHH in the world around them.

The process of developing their DHH identity is complex and will vary from student to student. Identities emerge as students interpret similarities and differences between themselves and others. An important factor is how students believe these similarities and differences are viewed by significant people in their lives (e.g., parents, siblings, teachers, classmates). When students interact with and observe the people around them, they receive direct and indirect information about what it means to be DHH.

Types of Identity

Students may have many different identities, depending on the feedback about themselves that they have received from others (Glickman; Frasu). Some students may identify with the hearing culture, some with the hard of hearing, and some with the Deaf culture. A sense of identity and belonging may be based on the student's ability to communicate in a common language and to share values, beliefs, customs, and so on.

The characteristics and ways of communicating associated with the different identities are outlined in the following table.

IDENTITY	CHARACTERISTICS	COMMUNICATION
Hearing	■ relates to world as a hearing person ■ may use hearing aids/cochlear implants	■ typically uses speech and listening to communicate
Hard of Hearing	■ identifies as part of a unique group (hard of hearing), rather than hearing or Deaf ■ may also assume either a hearing or Deaf identity, depending on the listening situation/communication partner	■ typically uses speech and listening ■ may use American Sign Language (ASL) in addition to speech/listening ■ may use sign supported speech
Deaf	■ identifies as part of a unique cultural group (Deaf Culture) with its own language (ASL), history, traditions, norms, arts, values, and so on	■ communicates primarily in ASL

The term *hearing impaired* "is not acceptable in referring to people with a hearing loss. Hearing impairment is a medical condition . . . It also fails to recognize the differences between the Deaf/Hard of hearing communities." (Canadian Association of the Deaf, terminology deafness.asp)

Unsure what to call a student who is Deaf or hard of hearing? Ask the student what they prefer!

Some students have a fluid identity and assume either a hearing, hard of hearing, or Deaf identity, depending on the listening situation/ communication partner. Other students may struggle to establish their identity. They may have difficulty fitting in with the hearing world due to communication challenges. They may miss incidental conversation and not understand sound-based concepts. Alternatively, they may have difficulty fitting in with the Deaf world. They may have limited ASL skills and little or no understanding of Deaf culture. Educators need to support students in developing communication skills and a healthy self-concept.

Students determine their identity as hard of hearing or Deaf individuals. When referring to these students, person-first language is preferred (e.g., students who are DHH), as it identifies the student first and the exceptionality second. If the student has a cultural and linguistic identity, saying "Deaf student" is acceptable because it recognizes the unique characteristics and culture of the Deaf.

Deaf Culture

Students who identify themselves as culturally and linguistically Deaf may be involved in the Deaf community.

The Deaf community is made up of people who are DHH. Belonging to the Deaf community does not require a specific amount of hearing loss— it requires a way of knowing and experiencing the world as being Deaf.

Deaf culture is the heart of the Deaf community. Language (ASL) is at the core of Deaf culture. The following illustration outlines some of the key components of Deaf culture:

Marlee Matlin, Deaf actor/author, won an Academy Award for her leading role in *Children of a Lesser Good* and has written an autobiography and children's books.

Tom Humphries coined the word *audism* in 1975 to mean an attitude or belief that people who hear and speak or have good English language skills are superior. This applies whether the person who hears and speaks is Deaf or hearing.

Deafhood
is a sense of self-acceptance as a Deaf person and as belonging to the Deaf community.

| Figure 9 | **Deaf Culture** |

American Sign Language
- ASL main component of Deaf cultural identity
- Create and share their own language (ASL)
- Important to spend time with others fluent in ASL
- Direct communication style

Deaf Culture
- Value Deaf history, sports, and clubs
- Interact with Deaf peers and adults to develop knowledge, skills, attitudes, values, and norms
- Celebrate culture and movement—Deaf heritage, stories passed through generations, humour, arts and crafts
- Visual access to communicate (closed captioning, flashing lights, texts, interpreters)
- Deaf authors, actors, artists

Deafhood

Deaf Community
- ASL main communication of Deaf community
- Community decision-making process, group consensus
- Meeting group needs priority
- Advocate/communicate with others
- Important that all receive new information
- Sense of belonging
- Learn identity from Deaf role models
- Cherish Deaf children as continuation of Deaf culture

Deaf Pride
- Emphasize positive view of being Deaf
- Emphasize abilities/achievements of Deaf individuals
- Contribute to positive social change
- Deaf doctors, lawyers, politicians

There are some commonalities that identify, in part, Deaf culture:

■ communication—eyes, hands, email, texting, video phones, lights for doorbells and alarms, and so on

■ language—American Sign Language

■ Deaf history, folklore

■ Deaf community—social groups, athletic teams, faith groups, service organizations

■ Deaf Way—common behaviours, such as sharing information, problem solving, community consultation

Self-Esteem

Students with varying levels of hearing loss may experience feelings of isolation and low self-esteem. Often this may be due to a lack of communication access in various situations:

■ students who are hard of hearing in a hearing environment who may not hear and/or understand all of the conversation

■ students who are Deaf and use ASL in a hearing environment with no ASL interpretation provided

■ a hearing individual who does not sign in a Deaf signing environment

The following illustration represents how a lack of communication access may lead to isolation:

Figure 10	*The Loneliness of a Deaf Child*

Source: Niemann, Sandy, Devorah Greenstein, and Darlena David. "Chapter 1: Hearing Difficulties and Communication—Why Communication Is Important." *Helping Children Who Are Deaf: Family and Community Support for Children Who Do Not Hear Well*. Illus. Heidi Broner. Berkeley, CA: The Hesperian Health Guides, 2014. 1. http://en.hesperian.org/hhg/Helping_Children_Who_Are_ Deaf:Why_communication_is_important. Reproduced with permission.

Communication access and an inclusive environment are vital for students to feel connected and to build their identity and self-esteem.

It is important to be sensitive to issues around self-esteem and to develop healthy self-esteem and self-advocacy skills in students. Specific suggestions in each of these areas are provided on the following pages.

Supporting the Development of a Healthy Self-Esteem

All students face situations where they have to deal with other peoples' beliefs and behaviours. The following ideas can support students in developing a healthy self-esteem:

Instead of	Try This
talking in front of a signing (ASL) student	ensure that an interpreter/notetaker is available for all classroom conversations and activities
telling a student "I'll tell you later" or "It's not important" if they have missed information or have been left out of a joke or a side conversation	ensure that the student understands the interaction in the moment it happens
whispering (putting your hand or other object in front of your mouth to prevent the student from seeing what you are saying)	leave the room or find a different location to have a private conversation
speaking to the interpreter rather than directly to the student (e.g., asking the interpreter to "tell him" or "tell her" something, or asking the interpreter why the student was late or absent)	communicate directly with the student and maintain eye contact (the communication is with the student—the interpreter is providing the visual translation)

Self-Advocacy

Self-advocacy is closely related to identity, self-esteem, and independence. Effective self-advocates are passionate and persuasive, knowledgeable and resilient, empowered and able to make informed choices that will affect their destiny.

A variety of resources and checklists regarding student self-advocacy skills are available online. Please contact your TDHH, ASL consultant, or AV therapist for further information.

Here is one example:

■   Laurent Clerc Center National Deaf Education Center, *Transition Skills Guidelines* (information on student communication, thinking skills, life planning, and emotional intelligence): http://clerccenter2.gallaudet. edu/products/?id=216.

📄 Ideas for Students to Become Self-Advocates

- Be self-aware.
- Be assertive.
- Be knowledgeable regarding the history and culture of people who are DHH in Canada and worldwide.
- Understand own hearing loss and communication needs.
- Understand own rights within society and the law.
- Be knowledgeable regarding technology and assistive devices (e.g., hearing aids, wireless audio systems, Bluetooth streamers, video conferencing, texting).
- Understand the difference between ASL and English-based sign systems.
- Understand the roles of and provide feedback to service providers (e.g., interpreters, computerized notetakers, audiologists).
- Request appropriate access services (e.g., ASL-English interpreter, computerized notetaker, peer notetaker, audio system).
- Have frequent opportunities to discuss access issues with others who have shared the same experience.
- Have frequent contact with role models who are DHH, including adults in positions of leadership and influence.
- Connect with local organizations for the DHH, and have access to relevant publications.
- Have frequent opportunities to affect the environment, make decisions, and experience leadership—at home, at school, with peers, in the workplace, and so on.
- Know the system (e.g., family, school, work, municipal, provincial, and federal networks) and appropriate avenues to effect change.
- Be a self-advocate—make own needs known to others.
- Identify barriers to access and equality.

Ask, if you don't understand.

Supporting Parents of Students Who Are DHH

The identification of a hearing loss in a child can be a time of stress and worry for a family. Feelings of grief, loss, fear, and denial are not uncommon.

Families will need both information and emotional support. These needs are ongoing and will change over time as, for example, families choose communication strategies, make transitions, and deal with changing technology.

If the child is to develop a healthy identity and self-concept, it is important that the parents move from grieving to acceptance. Parents may ask the classroom teacher for advice and support. The school team can provide information that supports the development of the whole student and helps parents understand the importance of having a strong language foundation. Language gives students the building blocks for social interaction and is the key to identity development. If a student learns language and meets developmental benchmarks for language at the same rate as their hearing peers, it is likely that they will develop on track in other areas of development as well.

Counselling supports children and families in the development of self-confidence, self-worth, self-advocacy, risk taking, perspective, and sense of humour. (Edwards)

Seek out other families!

Ninety-two percent of children with permanent hearing loss are born to two hearing parents. (Mitchell and Karchmer)

C O M M U N I C A T I O N

COMMUNICATION

Introduction

Hearing loss affects a student's ability to communicate. There are many different approaches to and opinions about how students who are Deaf or hard of hearing (DHH) should communicate, but everyone agrees that early language acquisition, whether that language is spoken or signed, is the most important factor for learning and success.

During the critical stages of language development (from birth to five years of age), children pass through natural stages of language acquisition that do not occur in isolation, but that parallel development in the areas of cognition and socialization. Language acquisition, cognitive development, and socialization together form the organizational framework for the child's developing communicative competence (Roth and Spekman). For many students who are DHH, this process is hindered, which has an impact on learning potential because language is the tool we use for thinking and learning in social, academic, and other communicative situations.

What Is Language?

Most people communicate through spoken language, so there may be an assumption that these two things—speech and language—are the same, but they are not.

Speech involves production of vocal sounds to form distinctive words. It requires the coordination of the articulators (lips, tongue, teeth, and soft palate) and use of voice (Boston Center for Deaf and Hard of Hearing Children). A baby babbling is an example of speech sounds without language—there is no meaning.

Language is a rule-governed set of symbols that is shared among people within a culture or a community. Language can be communicated through vocal/spoken words, through symbolic and meaningful visual/manual signs, and through written form (Boston Center for Deaf and Hard of Hearing Children). When we read and write, we are using language but not speech. Using signed language is another example of language that happens without speech. The signs connect to ideas or thoughts and help people to understand the world and other people.

As stated by the Boston Center for Deaf and Hard of Hearing Children, "**receptive language** refers to how an individual understands language" (e.g., comprehends questions, statements, stories), and "**expressive language** refers to how an individual uses language (e.g., communicates needs, shares ideas, requests information, asks questions, expresses thoughts or feelings)" (11).

The chart below shows how the areas of receptive/expressive language relate:

Figure 11	**Receptive/Expressive Language**
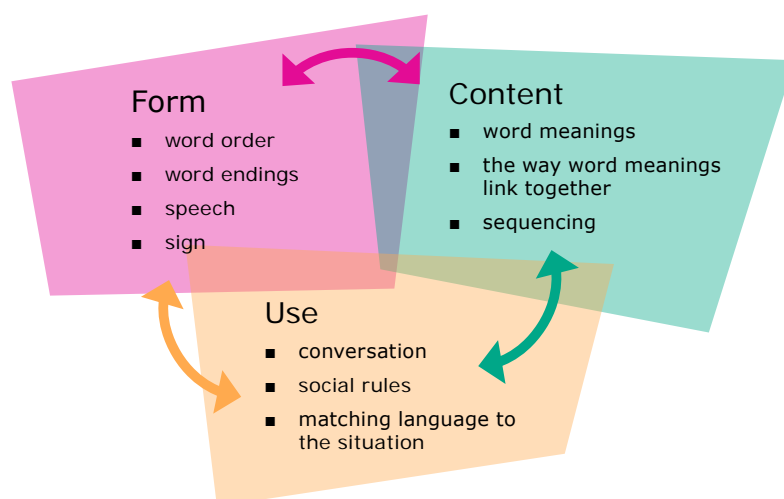
Reference: Bloom, Lois, and Margaret Lahey. *Language Development and Language Disorders.* Wiley, 1978.

How We Learn Language

In order to develop a language, children require continuous exposure to that language, and rich, repeated, and meaningful interactions with conversational partners throughout the day. Various language areas in the child's brain process the information received and begin to attach meaning to the language patterns perceived, whether they are spoken or signed language patterns. In this way, language skills are developed. This is a very complex process.

There is a critical language learning period from birth to age five during which language learning is typically effortless and the brain is primed to form neural connections upon which language is processed and understood. After age five, this brain development slows down, neural connections are deleted if not used, and the development of language becomes more difficult. Lack of access or exposure to early language learning experiences may result in significant delays.
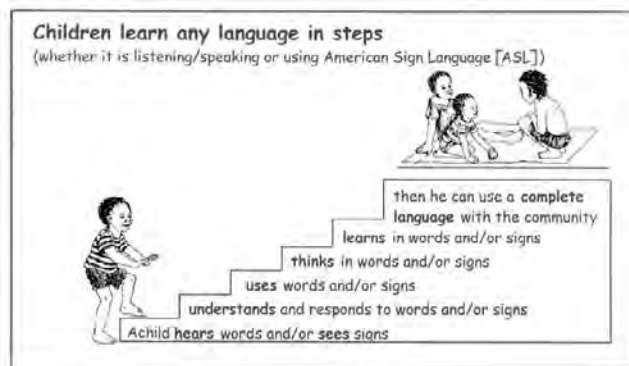
For young children to develop spoken language, it is important to provide them with auditory access through amplification and intensive spoken language exposure as early as possible. Children whose hearing loss is identified in infancy will have an easier time developing listening and spoken language skills than a child whose loss is identified later.

In the same way, for young children to develop ASL, it is important to provide them with visual access and intensive ASL exposure as early as possible. The later a child's hearing loss is identified and the later the exposure to language input, the more difficult it will be to develop understanding and use of ASL.

Children learn any language (whether it is listening/speaking or using ASL) in steps.

Figure 12	*Language in Steps*

Children learn any language in steps
(whether it is listening/speaking or using American Sign Language [ASL])

then he can use a **complete language** with the community
learns in words and/or signs
thinks in words and/or signs
uses words and/or signs
understands and responds to words and/or signs
A child **hears** words and/or **sees** signs

Source: Niemann, Sandy, Devorah Greenstein, and Darlena David. "Chapter 2: Children who cannot hear well need help early—Learning Language." *Helping Children Who Are Deaf: Family and Community Support for Children Who Do Not Hear Well*. Illus. Heidi Broner. Berkeley, CA: The Hesperian Health Guides, 2014. 1. http://en.hesperian.org/hhg/Helping_Children_Who_Are_Deaf:Learning_language. Adapted with permission.

The Importance of Language

"The need for and right to communication and language is fundamental to the human condition. Without communication, an individual cannot become an effective and productive adult . . . . The importance of communication and language for [D]eaf and hard-of-hearing children is so basic as to be beyond debate." (Siegel 258)

Language allows us to attach words to objects and concepts and to develop our minds. It helps us to understand our experiences and how the world around us works. It allows us to talk to ourselves and think, to make our needs and wants known, to interact with others, and to be part of a community. Language enables us to make comparisons, to sequence and plan, to understand explanations, to manipulate ideas, to reason, to make judgments, and to understand that others may have different points of view. Language allows us to develop a theory of mind, to learn academics, and to effectively function in our world.

Some parents of children who are DHH are satisfied if their child learns some basic communication skills, but in order to be successful, children need to develop comprehensive language skills.

Language is essential for cognitive development.

Figure 13   ***Staying Away From Danger***

Source: Niemann, Sandy, Devorah Greenstein, and Darlena David. "Chapter 2: Children who cannot hear well need help early—Learning Language." *Helping Children Who Are Deaf: Family and Community Support for Children Who Do Not Hear Well*. Illus. Heidi Broner. Berkeley, CA: The Hesperian Health Guides, 2014. 3. http://en.hesperian.org/hhg/Helping_Children_Who_Are_Deaf:Learning_language. Reproduced with permission.

Without language, a child will not be able to understand why the well in the picture above must be covered. He will not be able to understand his father's explanation that the cover is there for his safety. The child may go through his day not understanding why certain things occur or why they are done a certain way. This lack of language and understanding can cause the child to feel confusion, uncertainty, fear, and isolation. Comprehensive language skills would allow the child to make sense of his world.

Communication Continuum

Students who are DHH may learn to communicate through

■ listening/speaking

■ ASL

■ sign supported speech (SSS)

■ augmentative/alternative communication (AAC)

The following chart demonstrates how students may differ in their use of visual and auditory information. Student communication needs may be used to steer recommendations regarding language and communication approaches and strategies.
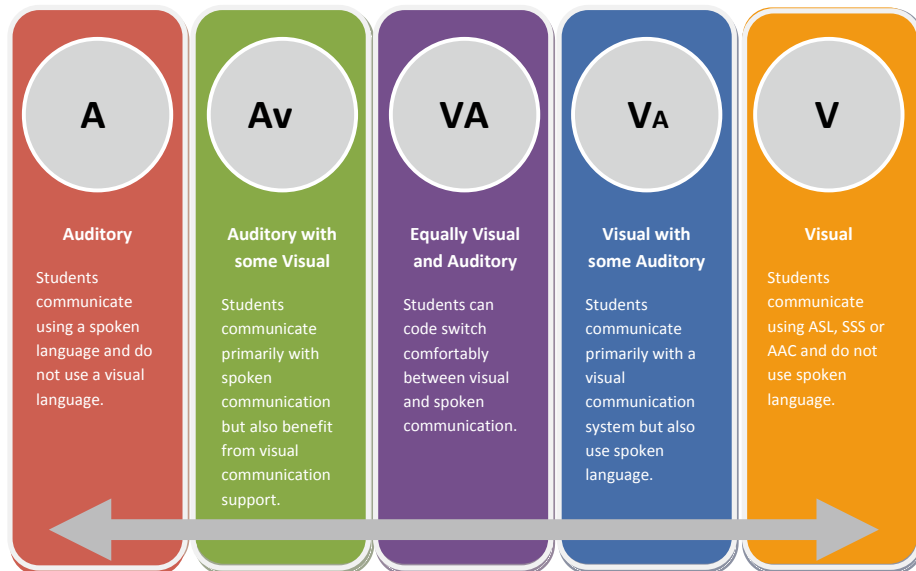
Figure 14	**Communication Continuum**

A	Av	VA	VA	V
Auditory	**Auditory with some Visual**	**Equally Visual and Auditory**	**Visual with some Auditory**	**Visual**
Students communicate using a spoken language and do not use a visual language.	Students communicate primarily with spoken communication but also benefit from visual communication support.	Students can code switch comfortably between visual and spoken communication.	Students communicate primarily with a visual communication system but also use spoken language.	Students communicate using ASL, SSS or AAC and do not use spoken language.

Students may move from one communication approach, depending on their needs/skills, to another, and the approach may change over time (e.g. from one year to the next). Also, the approach may vary, depending on the communication situation. For example, the student may

■ express their ideas verbally, but use ASL to receive information

■ sign or speak, depending on the communication approach of their conversational partner

■ require visual language support, depending on the noise level of the environment or the number of people speaking

The student's ability to receive information (receptive language) and share information (expressive language) may differ. For example, a student may readily understand spoken language, but have complicating factors (e.g., progressive hearing loss, auditory neuropathy, apraxia) that may limit his or her effective use of speech.

Another student, on the other hand, may be able to speak clearly and fluently, but may not understand the information without visual cues or sign language.

A one-size-fits-all approach will not meet the needs of all children with hearing loss. A combination of language and communication approaches may be employed and modified over time as the student's language skills evolve (Nussbaum and Scott). It is valuable to consider a child's access to language in all environments.

Listening and Spoken Language Approaches

"[T]he choice of a cochlear implant is usually associated with the choice of spoken language as the primary communication mode of the deaf child and family." (American Speech-Language-Hearing Association 20)

As verbal language develops through the auditory input of information, reading skills can also develop.

Advances in newborn hearing screening, hearing technologies, early intervention programs, and the knowledge and skills of professionals all contribute to the development of listening and spoken language skills in children who are DHH. The two main listening and spoken language approaches are the auditory-oral (AO) approach and the auditory-verbal (AV) approach. These approaches have more similarities than differences as they both focus on the development of spoken language. Both approaches emphasize the use of residual hearing through the use of hearing aids/CIs, and focus on the development of spoken language through listening. In the AO approach, students may also use visual cues (speechreading, gestures) to assist with comprehension. In the AV approach, there is an intensive focus on using listening skills throughout the day, without the use of visual cues. The AV approach involves rigorous application of techniques, strategies, and procedures, with family participation as an integral part of the therapy process.

Listening and spoken language approaches stimulate auditory brain development and allow children to attach meaning to what they hear. Auditory input that is relevant and significant makes it possible for children to recognize and comprehend sound.

We use our hearing in many ways—to comprehend the speech of others, to monitor our own speech, and to monitor the surrounding environment. Many factors affect a child's ability to learn through

listening. Children, however, benefit most when parents and professionals collaborate to build the foundations of learning through listening by doing the following:

■ Ensure that hearing aids/CIs are functioning optimally. Troubleshoot hearing aids/CIs on a daily basis.

■ Use clear, well-articulated speech.

■ Reduce environmental noise.

Auditory (listening) skills can be integrated into play, daily routines, and other meaningful activities.

The four main stages of listening are detection, discrimination, identification, and comprehension. The stages are sequential and can overlap. Please see page 50 (Auditory Training) for a detailed explanation of the stages of listening and auditory skill development.

Certain children, such as those who were diagnosed late, those who just received a hearing aid or whose CI has just been activated, or those who received amplification late, benefit from focusing on specific listening activities that are integrated into other meaningful activities. The idea is that in a one-on-one quiet setting, the child has successful experiences in listening alone. This will help the child in everyday noisy classroom environments (where there is speech in noise, speech at a distance, or muffled or mumbled speech) make optimal use of auditory cues in combination with visual cues.

Some students may have a hearing loss that was not identified during the critical language learning period (from birth to 5 years of age). For these students, developing listening skills may become a major challenge, as the auditory pathways in the brain did not receive adequate stimulation. Although amplification may help these students to hear sounds, they may struggle to make meaning out of the auditory signals. These students may benefit from visual supports or a visual language to access communication.

American Sign Language (ASL)

American Sign Language (ASL) is not English expressed through hand movements. Rather, ASL

■ is a **native language**—ASL is the primary language that people from the Deaf community in Canada and the USA use to communicate. There is a regional dialect of ASL used in the Manitoba Deaf community. Langue des Signes Québécoise (LSQ) is used in Francophone communities. Students develop ASL skills through exposure to native ASL users (e.g., Deaf adults who are fluent in ASL). ASL is valued by the Deaf community.

- is a **visual language**—ASL has distinctive components including handshapes, orientation, location, and movement to express ideas and concepts. It is different from spoken languages in that it has no written form.

- has a **unique grammar**—ASL is a complete language with its own structure and rules, its own grammar and syntax. It includes all the components found in recognized languages including morphology, phonology, verb agreement, classifiers, semantics, and pragmatics. It also combines grammatical components that are distinctive to signed languages across the world, such as non-manual markers, manual markers, handshapes, and facial expression.

Some people who are DHH consider English to be their primary language and use varying amounts of sign to support their understanding of speech. In these cases, signs are typically used in English word order. This would be considered using sign supported speech rather than ASL.

Language Acquisition

Research has shown that early language exposure is essential to normal development of any language, including ASL. Students require consistent exposure to skilled ASL language models in order to develop language, academic, and social skills. Lack of exposure may result in significant delays in each of these areas.

Only four percent of children who are Deaf are born to signing parents who are Deaf. The majority of children who are Deaf are born to hearing parents who have little or no exposure to ASL. As these families struggle to deal with this new situation, the child's exposure to language is often limited, delaying language development. In these cases, ASL is often introduced later in childhood (Mitchell and Karchmer).

> Fluency in a language typically takes an average hearing student seven years; therefore, a signing student may only be emerging in their first language when entering school.

English as an Additional Language (EAL) for ASL Students

In the course of learning one language (ASL), a student acquires a set of skills and **metalinguistic knowledge** that can be drawn upon when working in another language (English). Conceptual knowledge developed in ASL helps to make input in English comprehensible.

For example, if the student already understands the concept of feelings or honesty in one language, all they have to do is acquire the label for these terms in English (written or spoken). They have a far more difficult

Research indicates that children exposed to ASL from a young age, through interactions with fluent users of ASL, develop language in the same manner as children acquiring a spoken language.

Children who are Deaf born to parents who are Deaf acquire their first language (ASL) in a normal developmental way.

For detailed information about ASL grammar, visit the ASL University website at www.lifeprint.com/asl101/ (Vicars).

Metalinguistic knowledge

is the ability to think about and comment on language.

task if they have to acquire both the label and the concept in the second language.

Often a focus on developing a student's ASL skills (e.g., vocabulary, grammar) and world knowledge is important in assisting the development of English language skills.

Information about supporting the development of English as an additional language in the classroom is available on page 80 of the Education section.

> "One observation seems equally sure: Being exposed to two languages from birth, by itself, does not cause delay and confusion to the normal processes of human language acquisition." (Petitto et. al, qtd. in Nussbaum 56)

Augmentative and Alternative Communication (AAC)

Students who are DHH may require an augmentative and/or alternative communication system (AAC) to support their use of speech/ASL.

Augmentative communication refers to the use of aids or techniques that supplement an individual's existing verbal or ASL communication skills.

Alternative communication refers to the method used by an individual who cannot effectively use vocal ability to communicate.

An AAC system

- helps students with little or no speech to communicate
- provides the student with appropriate, efficient, and effective means to communicate with a wide range of partners in a variety of contexts
- may be provided for students to express their wants, needs, and ideas, and to engage in social interactions

An *unaided* AAC system can include the following:

- gestures
- signs
- body language

An *aided* AAC system can include the following:

- real objects
- photographs
- communication book with picture symbols

Use of keyword signing simultaneously with speech would be an example of an unaided AAC system.

- speech-generating device
- tablets or laptops with programs that assist the student in communicating

The student's AAC system and strategies are individualized for their learning and communication needs. The development of an AAC system is a team process. Information and support from the parents, the school team, and other professionals (e.g., TDHH, SLP, AV therapist, occupational therapist, audiologist) are needed to provide a complete assessment and plan for the student's communication needs and abilities.

The student's team will need to identify the level of symbolic functioning (e.g., real objects, photographs, picture communication systems, written language) to be used to facilitate the development of language, be it ASL or English.

Research indicates that the use of AAC supports spoken language, and possibly ASL, by increasing social interactions and language skills.

Information about supporting the use of AAC in the classroom is available on page 80 of the Education section.

Language and Learning

Literacy

is the ability to read, write, communicate, and comprehend. (Education Oasis)

Language provides an important foundation for **literacy** and learning skills for all students. The relationship between language and learning can be illustrated in a hierarchy, as in the figure that follows.

Figure 15 — **Language and Literacy Hierarchy***

* Source: Robertson, Shari. "Read with Me! Stress-Free Strategies for Building Language and Pre-literacy Skills." Canadian Association of Speech-Language Pathologists and Audiologists (CASLPA) Annual Conference. Winnipeg, MB. 3–6 May 2006. Available online at http://student.plattsburgh.edu/derm2044/robertson_readwithme.pdf. Adapted with permission.

- The bottom block represents all the words or signs that the student can understand (receptive language), and it is the largest.
- Only a portion of these words make up the ones the student can speak or sign (expressive language).
- Again, only a portion of those expressive words will be the ones the student can read (receptive written language), and even less will be part of their writing (expressive written language).
- As the top block indicates, only a small portion of the student's receptive language is brought to the task of learning in other content areas (science, math, social studies, and so on).

If the student's receptive language base is limited, all other areas of language and literacy learning may be affected, including reading, writing, and other classroom learning.

Each level does not need to be taught separately. An integrated approach should be taken to developing reading, writing, and learning in the classroom, always considering the student's background knowledge and skills.

In cases where a student's receptive language skills are limited, the curriculum needs to be adapted to the student's level of understanding.

Assessments in language, concepts, phonological awareness, and so on, conducted by the SLP, TDHH, and AV therapist, help in targeting goals for the IEP.

Phonological Awareness—Spoken English
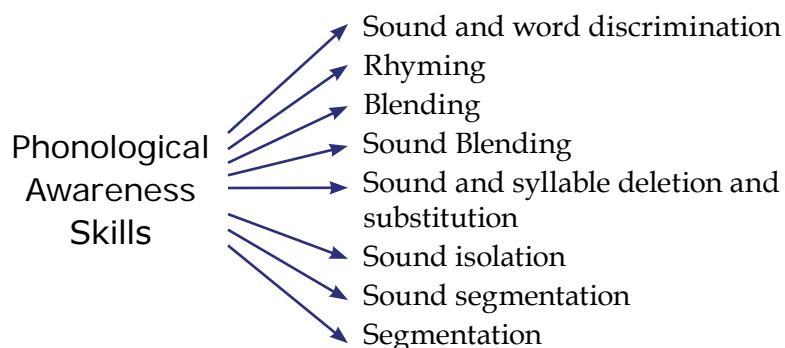
Phonological awareness
is the ability to hear and manipulate the sound structure of language.

See Appendix D for a developmental list of phonological skills.

Phonological awareness is a listening task that requires an individual to manipulate speech within sentences, words, syllables, or sounds. Phonological awareness activities include rhyming, identification of sounds within words, and segmenting/blending sounds. These skills emerge in preschool and continue to develop through the early school years. Phonological awareness is directly linked to success in early reading and spelling. Students who are DHH may experience some difficulty with various phonological awareness tasks as they may not clearly hear all of the speech sounds.

Phonological Awareness Skills
- Sound and word discrimination
- Rhyming
- Blending
- Sound Blending
- Sound and syllable deletion and substitution
- Sound isolation
- Sound segmentation
- Segmentation

Phonological Awareness—ASL

ASL also has its own phonology, looking at the smallest building blocks of language that are used to create signs. Each sign consists of five basic parts called **parameters**. These are as follows:

- handshape—the shape of the hand
- movement—how the hand moves
- location—where the sign is made on the body or in the air
- palm orientation—the orientation of the hand or palm as the sign is made
- non-manual signal/marker—facial expressions and/or head/body shifts made as part of the sign

Each of these parameters has a variety of aspects called primes. For example, there are over 40 different handshapes or primes in the handshape parameter.

A change in one parameter of a sign alters the meaning of the sign or makes it meaningless (i.e., a movement that is not a true sign). For example, the words *apple* and *onion* in ASL have the same handshape, movement, and palm orientation, but are signed in different locations, which results in a different meaning.

Students learning ASL must learn to manipulate these parameters to understand and create different signs, just as children learn to manipulate sound in spoken English.

Morphemes

are meaningful parts of words (e.g., suffixes, roots, prefixes).

Semantics

is the aspect of language concerned with meaning.

Syntax

is the set of rules for combining words into phrases, clauses, and sentences (eg., noun-verb agreement).

Grammar Acquisition—English

English grammar structures are a challenge for many students who are DHH. If the student has a functional and well developed first language (such as English or ASL), the difficulties may be somewhat lessened, but grammar will still typically remain a challenge for the majority of students with a hearing loss.

Students need to develop knowledge and understanding of

- how words are formed (**morphology**)—for example, cat**'s**, bak**ed**, cook**ing**
- the meaning of words (**semantics**)
- the set of rules used to string words together to form phrases, clauses, and sentences (**syntax**)

Incidental
language learning

occurs when students
learn words without
direct instruction.

Students with hearing
loss tend to be
stronger semantically
than syntactically.

Hearing students learn English grammar through exposure to other people's comments and conversations—this is called **incidental learning**. More than 90 percent of our language learning occurs incidentally. Basic grammar skills are usually well developed by midway through elementary school and the finer points are taught in the later grades.

Many students who are DHH, however, have limited access to incidental learning and thus limited exposure to English grammar. In addition, they may

- not have access to high frequency sounds (cannot hear the /s/ in plurals, possessives, and verbs)
- have difficulty with speech perception skills—speech sounds are not clear or they may not understand the grammatical structures (lengthy or complex sentences)

As a result, they may experience significant language delays and/or have gaps in their knowledge of various language structures and rules. They will require direct, explicit instruction and practice on specific grammar skills (e.g., using past tense verbs) to build their communication competence. Once the basic skills are developed, the student can scaffold or build on those skills to learn structures that are more complex. Consult the SLP, TDHH, or AV therapist involved with the student for specific grammar goals to include in the individual education plan (IEP).

Typical areas of concern for students who are DHH include the following:

- plurals—regular and irregular (e.g., cat/cats, mouse/mice)
- possessives (e.g., Mom's hat)
- third person singular (e.g., he wants; she reads)
- copula (or *to be*) verb (e.g., She *is* smart.)
- present progressive tense (*be + ing*) verb (e.g., He *is* runn*ing*.)
- subject/verb agreement (e.g., *He is* running. *We are* running. *She has* a book. *We have* a book.)
- past tense—regular and irregular (e.g., They walk*ed* to school. They *ran* to school.)
- article and pronoun use (e.g., *That* is *her* book.)

Difficulties in these areas are often reflected in the student's comprehension and expression of language (written and spoken).

Repeated exposure and opportunities to practise new skills in a variety of contexts are crucial. Opportunities to apply new skills through exposure to a wide variety of literature are also important.

Students who are DHH may learn English grammar through speaking/listening or through reading/writing only, depending on the degree of residual hearing, the communication approach used, and/or individual learning styles.

More information on strategies for helping students to acquire English grammar is available in the Education section on pages 83 to 85 and 95 to 96.

Grammar Acquisition—ASL

Students using ASL need to develop a knowledge and understanding of

- how signs are formed (morphemes and phonology)
- the meaning of signs (semantics)
- the set of rules used to string signs together to form phrases, clauses, and sentences (syntax)

Students need exposure to good ASL language models and direct instruction to develop these skills. Often in schools, the only person with whom they can sign is their interpreter. If they receive support from a signer with limited skills, their ASL exposure and development may be severely limited in school.

Students need opportunities to meet and interact with DHH peers and adults to increase their exposure to ASL and to enrich their own language skills. This can occur through links with other signing students in the school or in other schools in the division, regional social gatherings of students who are DHH, and participation in Deaf community events. Contact your TDHH for information on these types of opportunities.

Students can also benefit from support from the ASL/education consultant from Manitoba Education.

More information on strategies for helping students to acquire ASL grammar skills is available on pages 81 and 103, and by consulting the Manitoba Education ASL/education consultant and the TDHH.

Development of Communication Skills

Students with hearing loss may benefit from intensive instruction in auditory skills, which helps them to learn to listen and interpret what they hear through their hearing aids/CIs. With specialized, intensive language instruction, many of these children can learn to listen and speak effectively. This instruction could be in the areas of auditory training and speech therapy (articulation, oral motor therapy, and vocal quality). In addition, students may demonstrate skills in speechreading.

Auditory Training

Students with hearing losses ranging from mild to profound may benefit from auditory training. The degree to which a student who is hard

of hearing can develop his or her auditory (listening) skills will vary, depending on a variety of factors, including the following:

- residual hearing
- age of onset
- age of diagnosis
- age of intervention
- use of appropriate amplification
- environment for listening (quiet, acoustically sound)
- exposure to a variety of speech and environmental sounds and experiences
- desire to develop auditory skills
- cognitive ability

Auditory training involves developing skills in the following areas:

- detection/awareness of sound: responding to the presence or absence of sounds
- discrimination: perceiving similarities and differences between sounds
- identification: naming/pointing/drawing/writing to indicate the source of a given sound, imitating a given speech sound
- localization: identifying the direction of the sound source
- phonetic listening: discriminating the supra-segmental aspects of speech (pitch, duration, loudness); discriminating sets of words varying in difficulty from phonetically dissimilar words (e.g., *ball*, *elephant*) to phonetically similar words (e.g., *tap*, *tack*)
- auditory comprehension: understanding the meaning of sounds (e.g., ringing phone means someone is calling) and showing an understanding of speech by answering questions, following instructions, recalling information, conversing, sequencing information, and identifying absurdities
- auditory memory: recalling what was heard, recalling longer and more complex messages
- critical listening: listening for critical information in the presence of background noise at various distances from the speaker

When planning for daily auditory training, it is essential to establish a quiet setting, with a minimum of extraneous noise and distractions. Development of the student's listening skills are emphasized; therefore, it is beneficial to minimize speechreading cues during auditory training sessions. The consistent use of appropriate amplification is essential for auditory training. Goals in the areas of language, vocabulary, and basic concepts can be reinforced during auditory training sessions.

For strategies to develop students' auditory skills, see the Education section, page 82.

Speech Therapy

Speech therapy can include work on articulation, oral motor therapy, and work on vocal quality.

Articulation

Students who are DHH, depending on the degree and type of hearing loss, may have articulation or speech sound errors. Misarticulations are characterized by difficulty in producing speech sounds correctly. Common speech sound difficulties for students with hearing loss may include

- omissions (e.g., *-kool* for *school*)
- substitutions (e.g., *but* for *bus*)
- distortions (e.g., *shair* for *chair*)

A high-frequency hearing loss is the most common type of hearing loss. Students with a high-frequency hearing loss may experience difficulty hearing and producing high-pitched sounds, including /s/, /th/, /f/, and /sh/ (Doyle and Dye 8).

The /s/ phoneme is the most frequently occurring speech sound in the English language and also carries the most meaning. The /s/ and /z/ speech sounds are grammatical markers for plurals (e.g., cat/cats), possessives (e.g., mom/mom's), and verb tenses (e.g., run/runs). Not hearing these sounds may affect the intelligibility of a student's speech, depending on the hearing loss and the benefit the student receives from amplification.

> A student's articulation difficulties will impact their speech intelligibility.

Hearing loss/articulation difficulties may be reflected in the following areas of classroom learning:

- oral expression
- written expression
  - spelling
  - grammatical structures
  - editing

An SLP will assess a student's speech sound production. Speech sound intervention may include direct therapy by the SLP, indirect therapy, and/or a home program.

For classroom strategies to support accurate speech production, see page 82 of the Education section.

Oral Motor Therapy

In conjunction with speech therapy, oral motor therapy may be used as a warm-up for the speech mechanism, increasing oral muscle strength, control, and range of motion. The SLP can assist in determining the need for oral motor therapy.

Oral motor approaches may be used

- with young non-verbal (and in extreme cases, non-vocal) students to develop the basic foundations of speech (e.g., an oral airstream, basic laryngeal (throat) movement on an airstream, tongue movement, lip shaping)
- in promoting speech sounds, when students are unable to imitate or follow verbal instructions to produce particular sounds, even at a single sound level. Muscle control for producing an individual vowel or consonant sound (e.g., lip rounding for vowels, placement of tongue for specific consonants) may be practised and then incorporated into speech. (Williams, Stephens, and Connery)

Strategies to use with students who are DHH and who appear to be having difficulty acquiring speech are available on page 82 of the Education section.

Vocal Quality

Voice problems related to hearing loss vary considerably according to the type and degree of hearing loss. The more significant the hearing loss, the more likely that the student will have vocal quality issues.

Students who are DHH may not receive adequate auditory feedback to monitor their own voices. A vocal quality problem may interfere with the intelligibility of a student's speech.

Vocal quality difficulties may occur in the following areas:

- Timing, Rhythm, and Phrasing (word emphasis, pauses): Since the rhythm of English is especially stress-oriented, these dimensions are extremely important for speech intelligibility.
- Intensity (volume): Intensity problems can range from too loud to too soft, or there may be erratic changes in loudness levels. Students who are DHH may use a loud voice in a noisy classroom so they can hear themselves speak.
- Pitch and Intonation: Pitch and intonation may vary from insufficient pitch change, which may result in a monotone voice, to excessive or erratic pitch. The excessive variation may result from attempts by the student to increase the amount of feedback they are receiving from the activity of producing speech.

Appropriate pitch may be difficult to master because the student may not have a conceptual appreciation of what pitch is. Hearing people describe pitch in terms of high and low. Students who are Deaf may not have the same opportunity to learn by hearing high and low in the auditory domain. This is why a student who is Deaf may attempt to raise the pitch by increasing the loudness level of his or her voice.

■ Resonance (hyper-nasality, hypo-nasality): Hearing individuals subconsciously learn to adjust resonance through the auditory channel and through trial and error. An individual who is Deaf may not have access to the auditory information required to develop appropriate resonance.

Atypical resonance in some individuals who have a hearing loss can also be the result of structural abnormalities (e.g., cleft palate, syndromes).

The SLP will diagnose specific problems in these areas and may give recommendations to promote their development.

Speechreading

Speechreading was previously known as lip-reading, but now encompasses lip movement and facial expression. Speechreading provides some information when used in conjunction with residual hearing, amplification, and other strategies that assist in communication for a student with hearing loss.

Identifying speech sounds on the lips is not a reliable means of communication when used in isolation, as only 33 percent of speech sounds are visible on the lips (e.g., /b/, /m/, /l/); the rest are not visible (e.g., /k/, /g/, /ng/). The speechreadability of words will vary within the sentence, due to the words or sounds that come before and after the word. It is also easier to speechread when the context of the conversation is known.

Misunderstandings occur when speechreading. Factors that may affect the student's ability to speechread for information include

■ prior knowledge of the content
■ predictability of the message
■ familiarity with the vocabulary used
■ the speaker's rate of speech
■ visibility of the speaker's face (e.g., whether the speaker is face on or turned away, or in shadow, or whether there is a distracting background)
■ distractions such as gum chewing, eating, a moustache

Speechreading for information is a skill that may develop over time, as the individual grows in knowledge, reasoning, and language skills.

Language Knowledge and Skills Needed in the Classroom

All students need certain knowledge and skills to be successful in school. These include the following:

- vocabulary
- concepts
- following directions
- wh- questions
- storytelling

- Theory of Mind
- critical thinking
- executive functioning
- social skills

Vocabulary

Vocabulary is one of the essential components of language development and reading skills acquisition. Many students, including those who are DHH, have poorly developed vocabulary in both spoken and written language.

It is estimated that the average student hears approximately 30 000 words per day. A student who is DHH may not have access to many of those words. We cannot, therefore, assume that students who are DHH will learn language, including vocabulary, incidentally.

Learning Vocabulary

For the purposes of learning vocabulary, various groupings can be used:

- Association (how things go together)
- Function (what items are used for)
- Categories (name for a group of items that belong together)
- Attributes (descriptors)
- Comparisons (how items are the same/different)
- Synonyms (words that mean the same thing)
- Antonyms (opposites)
- Definition (how to define the word)
- Exclusion (how an item does not belong)
- Multiple-meaning words (words that have more than one meaning)

Classroom Connections

Students who are DHH may

- have a limited vocabulary

Children with hearing loss may struggle with vocabulary learning because they may not be acquiring new words incidentally.

Students may need to be taught explicitly and intentionally using specific word instruction, word-learning strategies, repetition, and active engagement.

It is important to teach multiple meanings of words to build comprehension.

- not have made the associations that certain items go together and why
- be weak in identifying categories or in classification skills
- need vocabulary to be taught in multiple modalities (e.g., English print, ASL, spoken language)
- need vocabulary to be intentionally linked to whatever background knowledge may or may not exist (in which case background knowledge would need to be taught)
- need vocabulary and unfamiliar concepts to be pre-taught and reviewed
- need links made to similar items and need categories identified—in many cases, students have picked up words here and there and do not have anything to link these pieces of information to (linking vocabulary to a category and giving it a name will help students form concepts and vice versa)
- benefit from using graphic organizers such as semantic webs and maps
- need development of multiple-meaning words—students may learn a word in spoken language or English print and associate it with only the one meaning (this becomes especially difficult as language becomes more complex in the later years and directly affects comprehension and production of written and oral material)

Concepts

Basic concepts are the building blocks that students need to follow directions, engage in classroom routines, and provide descriptions. Acquisition of concepts occurs in a developmental sequence.

Concepts include the following:

- Colours (e.g., red)
- Numbers/counting (e.g., 3)
- Letters (e.g., A)
- Size (e.g., big, short)
- Comparisons (e.g., same, different)
- Shapes (e.g., circle)
- Direction/position/location (e.g., on, behind, near, next to)
- Self-/social awareness (e.g., happy, mother, young)
- Texture/material (e.g., hot, smooth, clear)
- Quantity (e.g., many, enough, nothing)
- Time/sequence (e.g., night, next, before)

Concept development may be delayed in students who are DHH.

Classroom Connections

Students who are DHH do not necessarily develop concepts in sequential (developmental) order. They may have mastered higher-level concepts but have gaps in earlier concepts. Thorough assessment of all concepts may be necessary, and any gaps in development may need to be intentionally taught.

Hands-on experiences and the use of actual objects are a great way to teach concepts and can easily be integrated into any lesson. Presenting pictures and the words in print on the board also facilitates learning.

More suggested strategies to help students develop vocabulary and concepts are available on pages 83 and 84 of the Education section.

Following Directions

Following directions in a noisy classroom can be very challenging for a student who is DHH.

Following a direction involves hearing or seeing the message, understanding, and remembering a set of instructions presented in a specific order or sequence. A student who is DHH may not be able to follow a direction due to a breakdown in any one of the following areas:

- The student may not be able to hear the direction or may only hear part of it due to the noise level in the classroom or the distance the student is from the speaker. A student using sign language may not see the full signed message.
- The student may not understand the concepts, vocabulary, or the grammatical structures used in the direction.
- The student may not be at the developmental listening level to remember the number or sequence of directions.

Classroom Connections

Strategies that a teacher can incorporate on a daily basis in the classroom setting to aid a student who is DHH are available on page 85 in the Education section.

Wh- Questions

Understanding and responding to wh- questions is a complex language task. Frequently, students who are DHH have difficulty with wh-questions, especially if they are not familiar with the topic.

Understanding is improved if the question concerns

■ an item that is concrete/visual in the room (e.g., "Who is that girl?")

■ a topic that they have experienced directly (e.g., fishing) and that has affected them

Wh- questions vary in complexity. From simplest to hardest the basic question forms are

■ Who?

■ What?

■ Where?

■ When?

■ How?

■ Why?

■ Negative why?

Classroom Connections

The "why" questions require abstract reasoning skills and are crucial for success in the classroom, specifically for following directions and instructions. The most difficult wh- questions (e.g., Why? How?) are also the most frequently used in the classroom setting. Cognitive and/or language issues and the lack of an experiential base play a large role in this area of difficulty.

Strategies to help students with wh- questions are available on page 85 of the Education section.

Storytelling

A story or narrative is an account of an experience or event that is sequenced in a particular order to convey meaning. Stories are an integral part of everyday life and are an important source of information about language and our world.

Students are constantly exposed to stories and expected to comprehend them in a variety of forms, including signed storybooks or oral stories, television, movies, and cartoons.

Students who are unable to understand stories may have difficulty reading, telling, or writing stories, or even difficulty recounting events that have happened.

The student who is DHH may be delayed in his or her understanding and use of narratives due to limitations in the following areas:

■ vocabulary

■ concept development

■ grammatical language

■ auditory memory

■ overall background knowledge

■ ability to grasp the main idea

■ part-to-whole reasoning (e.g., how story components are interrelated)

■ sequencing and time concepts

Due to limitations in language, the student may understand the action but not the underlying intentions or beliefs of a story, which will affect his or her ability to understand or retell the story.

For example, in the preschool story of Little Red Riding Hood, the story is much more than a tale of action in which Little Red Riding Hood is just taking food to her grandmother. The content of this story is related to the desires and beliefs of the characters.

Little Red Riding Hood has a false belief, in that she thinks that the wolf is her grandmother, but the reader or listeners know that the wolf is deceiving her and intends to eat her. The student must see beyond the mere action of the story and understand that Red Riding Hood does not know what the listener knows.

Classroom Connections

Strategies to promote understanding and use of narratives in the classroom are available on page 85 of the Education section.

Theory of Mind

Theory of Mind (ToM) is the ability to understand that what you think, feel, or believe may not be the same as what someone else thinks, feels, or believes. Skills in ToM allow one to recognize the thoughts and feelings of others; to understand, explain, predict, and influence how other people behave; to put oneself in another's shoes and see their perspective; to develop empathy for others; and to read social cues. ToM has been described as falling into four domains: cognitive, affective, interpersonal, and intrapersonal.

Typically, children begin exhibiting ToM skills at about age four with skills developing in a trajectory. By adulthood, a complex skill set of ToM allows people to make and maintain social relationships and manage everyday social situations.

There is a strong connection between language and ToM. Children need exposure to and interaction in a language-rich environment in order for ToM skills to develop. They need opportunities to hear/see and participate in conversations that include different points of view, the use of mental-state terms (e.g., *know, believe, think, wonder, need, hope*), and a range of language structures.

For some students who are DHH, a lack of language exposure, the inconsistent use of amplification, difficult listening environments, and a lack of shared language in the home can result in limited exposure to these concepts and thus delays in skills. A lack of ToM skills can have a significant negative impact on social interactions and relationships and on pragmatic communication. People need to see other perspectives to effectively solve problems, negotiate, and consider the feelings of others in conversation and actions. A delay in ToM skills also has an impact on academic achievement, as these skills are involved in a wide variety of areas including reading comprehension, writing, and understanding the motivations of people (social studies, history, politics).

Classroom Connections

Strategies teachers can use to support the development of ToM are available on page 86 of the Education section.

Critical Thinking Skills

The development of age-appropriate critical thinking skills for students who are DHH is complicated because there is often an overlay of language difficulties.

Higher-level language abilities are often missing due to lack of experiential language which, in turn, has an impact on reasoning skills. Many of these students are concrete thinkers who need direct assistance to develop more abstract reasoning skills. Direct therapy to teach problem-solving constructs may be necessary.

Developmentally, a student needs to acquire the following skills:

- classification skills
- comparing and contrasting skills
- answering true/false questions
- making and explaining inferences
- identifying causes of events
- identifying problems and solutions

Students with a hearing loss may experience difficulties developing these skills.

"Effective and appropriate social communication/ pragmatic language skills require a communicator to have a theory of mind." (Westby and Robinson 362)

See Appendix F for Revised Bloom's Taxonomy.

Classification Skills

The ability to classify is a basic cognitive function that enables students to organize ideas, sequence them, and think about them logically. These skills are the foundation for all abstract thought.

Comparing and Contrasting Skills

The ability to sort objects into sets based on attributes and to be able to look at the similarities and differences between the sets develops with classification skills.

Answering True/False Questions

Answering true/false questions requires taking in information and questioning its validity.

Students need to assess information based upon their prior knowledge and newly acquired data. They need to evaluate information, form opinions, know the difference between opinion and fact, and be able to express their understanding.

Making and Explaining Inferences

Making and explaining inferences involves combining old information with new, evaluating what is important, and analyzing the results from this logical process. This is a high-level language ability.

Identifying Causes of Events

To identify the causes of events, students look at a situation and determine the probable cause from a number of options. This skill moves from the concrete through to a highly abstract reasoning ability and requires flexible thinking processes.

Identifying Problems and Solutions

The ability to identify problems and solutions can be actively taught as a process. An effective tool in teaching the process is the use of external frameworks or visuals such as the one in Appendix G.

Classroom Connections

Strategies teachers can use to develop critical thinking skills in each of these areas are available on page 87 of the Education section.

The teacher may need to provide a solid background in critical thinking skills to facilitate effective problem solving.

Executive Functioning

Executive functioning (EF) is a complex set of abilities/skills that work together to regulate and direct one's thinking, behaviour, and emotions in order to stay on task and achieve goals. It is a self-management process. EF skills include the following: planning, organizing, attending, sequencing, controlling mental effort, using working memory, self-monitoring, inhibition control, flexible thinking and problem solving, and juggling multiple tasks. EF abilities guide social behaviour and are thus linked to social cognition (Theory of Mind). Students need EF abilities in order to achieve success on higher-level cognitive tasks.

EF emerges in the first year of life and continues to develop through early adulthood with significant growth between ages 4 to 6. Complex language is needed to effectively carry out EF processes, and research shows there is a high correlation between language abilities and EF skills. Increasingly sophisticated language is required for EF development as a person matures.

Research shows that many students who are DHH have delays in EF skills due to a lack of language exposure and language skills. These delays can have a significant impact on their self-management, social interactions, and academic achievement.

Classroom Connections

Strategies teachers can use to promote the development of EF skills are available on page 89 of the Education section.

Social Skill Development for Students Who Are DHH

Students who are DHH may experience difficulties in the development of appropriate social skills.

The Significance of Incidental Language Learning

Many social skills are acquired in the hearing population through incidental learning. This means that hearing students learn social nuances in their everyday interactions by seeing and hearing others around them. These skills help them navigate the social world.

Students who are DHH may have limited access to this incidental learning, especially if they are in an environment where their primary mode of communication is different from that of their family and peers.

As families begin to deal with alternative forms of communication or adjust to their child's hearing loss, often communication is basic and directive (e.g., "Go to bed"; "Time to eat").

Students who are DHH need exposure to interactive communication so that they become aware of the grammar and use of their language. This also helps students develop social skills.

Using Language

Use of language can be broken into several categories reflecting maturation and language development. These categories are

- pre-language skills
- pragmatics or the functions of language
- social skills

Pre-language Skills

Pre-language skills are behaviours that a student must acquire in order to adequately develop language. They include the following:

- making eye contact
- taking turns
- being able to focus on the same task as another person
- paying attention to things and people
- being able to imitate and use gestures and sounds
- playing appropriately with toys
- understanding cause and effect
- communicating with intent

Pragmatics or the Functions of Language

Pragmatics delineates how students use language to have an impact on the world around them. Pragmatics basically explains why a person communicates. These purposes include the following:

- making a request
- protesting about something
- greeting or saying goodbye
- responding to another person's communication
- asking for information
- thinking, planning, and problem solving
- sharing feelings, ideas, and interests

Students who are DHH may have difficulty with paying attention, taking turns, and making eye contact if they are struggling to understand a hearing world without clear expectations of how they are to behave.

Students who lack pragmatic language skills may experience social awkwardness or difficulties, as they may not understand the rules, nuances, and language of social interaction with others. The student may be puzzled by confused or negative responses from peers and adults.

It should also be noted that if a student uses ASL, Deaf culture has its own expectations for social behaviour that may or may not be the same as hearing culture expectations. These need to be taken into account. Exposure to both systems of relating is recommended.

Social Skills

Social skills are the behaviours a student exhibits to survive in a social world. Grasp of social nuances is crucial as these students mature. These skills may include the following:

- social register (e.g., how a student addresses a teacher versus a peer)
- non-verbal conversational skills (e.g., body language, facial expression)
- ability to express opinion
- ability to express emotions
- conversational skills
- manners
- ability to resolve conflicts
- problem-solving skills

With higher-level social skills, the demand for language skills increases. Exposure to a variety of social situations is crucial for the student who is DHH to grasp the often subtle cues that influence social appropriateness.

Issues most often seen with the DHH population include poor problem-solving skills, difficulty with conversational skills, poor self-esteem, and difficulty with the higher-level language skills that go along with the social aspects of interaction.

E D U C A T I O N

EDUCATION

Introduction

Hearing loss can affect the way

- the student communicates
- the student learns language
- the student receives information
- the student demonstrates learning
- the teacher assesses learning

Language skills often affect the student's ability to meet curricular outcomes. Students with language delays may require adaptations to accommodate their learning needs.

The characteristics and needs of students with hearing loss have changed over time:

- Increasing numbers of students are receiving cochlear implants.
- Fewer students are using ASL than in the past, due to improved technology and increased access to sound.

- Surveys indicate that 35 to 50 percent of students who are DHH have an additional, educationally significant condition or disability (Marschark and Spencer 171).

- Newcomer students in Manitoba are often being identified as having significant hearing losses. These students often have not received amplification or intervention services and often have limited or no language skills. Programming appropriately for these students poses a great challenge for schools, and both students and families require intensive supports.

The communication and educational needs of students need to be considered, and appropriate supports put in place to address them.

This section will provide information about how to make classrooms and teaching practices more friendly and appropriate for students who are Deaf or hard of hearing.

Creating a DHH-Friendly Environment

Students with a hearing loss may face many challenges in an educational setting.

> Classrooms are language-rich listening environments, but they are also large and noisy. Children with mild hearing loss may be able to understand their teacher or classmate on a one-on-one basis; they may be able to follow class discussions with the assistance of technology. Still, they cannot reliably access the incidental learning that takes place in every classroom. They may miss a response from a student across the room, a comment from the teacher about an incorrect answer, or a new topic raised as the teacher writes on the blackboard. (Meyer 20)

Adaptations are supports provided to students to assist their learning. They are required for the students to achieve most of the curricular outcomes prescribed by Manitoba Education.

Students who are DHH may benefit from environmental adaptations and strategies for facilitating communication, classroom management, and classroom/assessment adaptations. The four handouts that follow give suggestions to help provide an effective learning environment for all students in the classroom.

Comments from Students Who Are DHH

"I hate it when. . .

- ". . . I don't hear something and people say 'never mind,' 'tell you later,' or 'it's not important.'"

- ". . . I can't hear people during group work when it is noisy in the classroom. I just tune out!"

Please take the time to include students by rephrasing, repeating, or providing a visual cue.

📄 Environmental Adaptations

Target	Strategies
Minimize Noise	■ Treat the room: use muffling devices (e.g., "Hushh-ups" or "Floor Friends") on chair and table legs, add carpet, add room dividers, hang cloth banners/crafts, and so on. ■ Encourage quiet in the classroom. ■ Reduce auditory "clutter" (e.g., no background music, close windows and doors). ■ Seat the student away from noise sources (e.g., fans, computers, outside traffic, pencil sharpener).
Maximize Speaker's Voice	■ Use a wireless audio system if available. ■ Encourage peers and guest speakers to use the sound system microphone, and pass the microphone in group discussions (to help visually identify the speaker and provide clearer communication). ■ Move closer to the student with a hearing loss.
Maximize Visual Access	■ Ensure good lighting—keep the room bright enough for students to see speaker's face. ■ Do not stand in front of a bright window when talking, as this will put your face in a shadow. ■ Face the class as much as possible, and minimize walking around the room while speaking. ■ Stop talking when turning to write on the board. ■ Face the students while giving notes—use overhead projectors or electronic whiteboards. ■ Preferential seating should be available—allow students who are DHH to choose where they see and hear best. ■ Circular or semicircular seating arrangements provide visual access to information. ■ Use visual aids (e.g., maps, objects, pictures, charts, vocabulary word wall, concept maps, written key ideas, daily schedules, lesson outlines). ■ Use closed-captioning (CC) when viewing videos, DVDs, and TV programs. Use CC or SDH (subtitles for the Deaf and hard of hearing), which provide background sounds in addition to regular subtitles. ■ Use flashing lights for safety alarms. Establish a visual system (signal, text) for emergency situations (e.g., lock down) for students with significant hearing loss.
Reduce Auditory/Visual Fatigue	■ Be aware that students who focus intently on auditory information all day may need brief auditory breaks, while those who focus visually (e.g., on speechreading, watching ASL interpreter) may need brief visual breaks.

Circular or semicircular seating works best. It allows students to see one another, more easily identify the speaker, and better follow the conversation/discussion.

Facilitating Communication

Target	Strategies
Reduce Auditory Fatigue	■ Alternate heavy listening demands with quiet activities. ■ Keep instructions short and clear. ■ Speak at a normal volume and rate. ■ Pause between statements to emphasize key concepts. ■ Some students may require extra processing time. ■ Allow downtime privileges if needed (e.g., a quiet place to go).
Communicate Clearly Locating the speaker in large classrooms is difficult—call students by name or point to indicate who is speaking.	■ Get the attention of the student prior to beginning a lesson or group discussion (e.g., wave, turn lights off/on once, gently tap the table, or touch the student's shoulder). ■ Ensure that only one student speaks at a time. ■ Identify the person speaking—call students by name or point to indicate who is speaking. ■ Encourage all students to turn and look at the speaker when listening. ■ Repeat or rephrase other students' comments. ■ Students who are DHH may become lost when rapid topic changes occur during the lesson—draw attention to changes in topic, so that the student can contribute to the discussion. ■ When talking about an object, or someone in the room, glance or point in that direction. ■ If a student is reluctant to ask for clarification, create a "secret signal" for the student to use. ■ A smaller group of students, in a quiet location, will allow students to have more opportunities to effectively access communication, to feel included, and to share ideas. ■ Use technology. Open, closed-, or real-time captioning can be helpful for all students. ■ Maintain good eye contact, speak clearly, and write down important information.
Optimize Visual Environment for Students Who Use ASL	■ Have a visually uncluttered environment. ■ Wear clothing with minimal or no pattern. ■ Minimize jewelry worn. ■ Provide good sightlines between students and interpreter or signer.

Hearing children passively absorb essential daily information by overhearing conversations, as much as 90 percent of their learning. (Chotiner-Solano)

Classroom Management

Strategy	Description
Professional Learning	■ Ask the teacher of the Deaf and hard of hearing to provide professional learning opportunities on hearing loss and communication strategies for peers and staff early in the school year.
Routines	■ Establish schedules and routines, notifying students of any changes.
Listening	■ Make listening a class issue rather than singling out the student who is DHH.
Organized Material	■ Provide class material that is well organized and easy to follow, and that connects to a well defined goal.
Announcements	■ Jot down announcements on the board or request a printed copy from the office. Repeat intercom information for the class.
Interpreter or Computerized Notetaker	■ Use an ASL-English interpreter or a computerized notetaker as needed.
Hands-On Learning	■ Use visual aids and hands-on techniques.
Group Work	■ Teach in small groups.
Community	■ Develop strategies to promote friendships among students—this will help all students feel that they are valued members of the classroom community.
Test Preparation	■ Prepare students for test formats by providing sample tests for tutors and/or family to review. Do the same for difficult worksheets, particularly story problems in mathematics.
Team Communication	■ Keep the team apprised of progress by making a short comment or two at the end of the day using a notetaker and/or a communication home–school notebook for younger grades.
Awareness	■ Be sensitive to a lack of incidental learning opportunities. Lack of incidental language learning experiences is reflected in all aspects of the curriculum.
Openness	■ Be open and candid, and maintain a sense of humour.
Participation	■ Expect participation from students who are DHH in the same manner as from other students in the class.

Write down key ideas.

Classroom/Assessment Adaptations

Classroom/Assignment Supports (Check all that apply)	Assessment Supports (Check all that apply)

Classroom/Assignment Supports

- ❏ preferential seating
- ❏ visual attention getters/transition strategies
- ❏ frequently varied activities
- ❏ material sent home to preview
- ❏ pre-taught/post-taught lesson
- ❏ comprehension checks
- ❏ educational assistant support in most classes
- ❏ interpreter support in most classes
- ❏ computerized notetaker support in most classes
- ❏ scribe support in most classes
- ❏ use of calculator
- ❏ small group support
- ❏ audiotapes/materials read
- ❏ use of large print materials
- ❏ use of alternate reading materials
- ❏ photocopied notes/test
- ❏ fewer paper-and-pencil tasks
- ❏ highlighted notes/text
- ❏ directions given in small steps, repeated by student
- ❏ reduced/minimized distractions
- ❏ redirection/refocusing
- ❏ written backup for oral directions
- ❏ modelling of friendship skills/support for social skills development
  - ▪ concrete reinforcement
- ❏ use of assistive technology
  - ▪ hearing aid(s)
  - ▪ cochlear implant(s)
  - ▪ bone-anchored implant
  - ▪ computer or tablet
  - ▪ wireless audio system
  - ▪ soundfield system
  - ▪ dictation software
- ❏ extended time for completion of assignments
- ❏ manipulatives
- ❏ use of graphic organizers taught
- ❏ tutoring/peer tutoring
- ❏ shortened assignments
- ❏ reduced amount of homework
- ❏ assistance with organizational skills
- ❏ reduced/adapted reading level of materials
- ❏ written daily schedules
- ❏ augmentative communication system
- ❏ directions repeated by student
- ❏ opportunities for socialization
- ❏ specific use of student's learning style
- ❏ behaviour contract
- ❏ other (specify) _____

Assessment Supports

- ❏ use of vocabulary sheet
- ❏ use of calculator
- ❏ use of dictionary
- ❏ opportunities for breaks
- ❏ enlarged print size/specific font
- ❏ extended time
- ❏ simplified wording
- ❏ test/exam review
- ❏ practice questions
- ❏ provide clarification
- ❏ test read to student/oral testing
- ❏ open-book exam
- ❏ scribe assistance
- ❏ shortened test
- ❏ clues provided
- ❏ taping of test
- ❏ alternative assignments/project in lieu of test
- ❏ alternative methods to demonstrate mastery of content
- ❏ permitting rewriting/resubmission to improve grades
- ❏ repeated modelling/practice
- ❏ use of pictures
- ❏ use of manipulatives
- ❏ use of webbing/mapping/brainstorming
- ❏ alternative setting
- ❏ take-home exams
- ❏ use of actual test as study guide
- ❏ use of assistive technology
  - ▪ hearing aid(s)
  - ▪ cochlear implant
  - ▪ bone-anchored implant
  - ▪ computer or tablet
  - ▪ wireless audio system
  - ▪ soundfield system
  - ▪ dictation software
- ❏ preferential seating
- ❏ adapted format (multiple choice, fill in the blanks, etc.)
- ❏ explicit teaching of how to take tests
- ❏ other (specify) _____
- ❏ _____

Assessment

Classroom-Based Assessment

Assessment is a regular ongoing process in every classroom. Effective assessment practices include using a variety of tools and methods, such as classwork, tests, developmental checklists, and portfolios of student work.

Assessments for students who are DHH will be similar, but may require adaptations. Examples of assessment adaptations are

- clarifying directions
- providing a quiet room for tests
- allowing a longer period of time for exams or tests
- providing verbal or signed tests and assignments
- providing alternative ways to test knowledge other than written

When assessing students who are DHH, ensure that you are using language at the student's level. Test academic knowledge, not language skill. For example, the student may know the science concept but may not understand the complex English language sentence used in the test question.

Specialized Assessment

Assessments are often conducted with students who are DHH in order to establish a baseline of receptive and expressive skills. Formal assessments in areas such as cognitive, language, speech, and auditory skills are done by a specialist such as an SLP, a TDHH, an AV therapist, an ASL specialist, an audiologist, or a psychologist. Any assessment of students who are DHH includes consideration of their primary communication mode and, if appropriate, their hearing age versus chronological age.

Standardized tests

are "carefully constructed measurement instruments that require specially trained individuals to ensure they are properly selected, interpreted, and used" (Manitoba Education, Citizenship and Youth, *AEP: Handbook for Student Services* 79).

All the areas of communication, speech, and language that were discussed in the Communication section can be assessed using specialized tests (e.g., vocabulary tests, language tests, reading and writing tests, and articulation tests). The purpose of this testing is to measure the progress students are making and, in the case of **standardized tests**, to compare their achievement to that of other students of the same age or grade level.

The specialists conduct an initial assessment to establish a baseline of skill level in specific areas. Follow-up assessments will reveal progress and areas requiring further development. Assessments are also used to

- identify gaps between curriculum goals and the student's skills
- identify specific skill areas requiring further development (IEP goals)
- measure the effectiveness of tutorial goals and the appropriateness of materials

In some cases, resource teachers or special education teachers might also do some testing with students who are DHH.

Students with a hearing loss may require adaptations (e.g., the use of signed language, support of pictures or gestures) during standardized assessments to accommodate their learning needs. In addition, the results of testing must be interpreted with caution because the tests are not developed specifically for students who are DHH.

The specialists in this area will interpret test results and provide information to help the classroom teacher work with students in the classroom and to help parents work with the students at home.

The school support team or specialists can provide further information regarding information about assessing communication skills in students who are DHH.

Student-Specific Planning

Student-specific planning is the process through which members of student support teams, including educators and parents, collaborate to meet the unique needs of individual students. The purpose of student-specific planning is to help students attain the skills and knowledge that are the next logical step beyond their current levels of performance. Through the student-specific planning process, the student support team works to identify a student's learning needs and to develop, implement, and evaluate appropriate educational interventions.

Student-specific plan (SSP) is a global term referring to a written document developed and implemented by a team, outlining a plan to address the unique learning needs of a student. An SSP is a document that functions as a planning, record-keeping, and communication tool.

SSPs for students who require adaptations within programming based on provincial curricula can often be completed in one or two pages. This may be an appropriate plan for a small number of students who are DHH.

The majority of students who are DHH, however, even if they are following the regular curriculum, have more complex needs. They require student-specific outcomes in domains outside of the provincial curriculum and thus require a more detailed and comprehensive SSP called an **individual education plan (IEP)**.

Appropriate Educational Programming in Manitoba: Standards for Student Services (Manitoba Education, Citizenship and Youth) is available online at www.edu.gov.mb.ca/k12/specedu/aep/pdf/Standards_for_Student_Services.pdf

Student-Specific Planning: A Handbook for Developing and Implementing Individual Education Plans (IEPs) (Manitoba Education and Training) is available online at www.edu.gov.mb.ca/k12/specedu/iep/.

An IEP is tailored to the individual student's needs in the school environment. When trying to decide which areas to address in programming for a student with a hearing loss, consider the following:

- educational implications of the student's hearing loss
- teacher observations/student's classwork
- verbal/ASL/written expression
- formal assessments (from SLP, **psychologist**, ASL tutor, **occupational therapist** [OT], **physiotherapist** [PT])
- student's values and goals
- parents' values and goals for the student
- age appropriateness
- urgency of the need
- social development

The focus of an IEP for a student who is DHH is typically on communication, language acquisition, identity, and socio-emotional development.

Student-Specific Outcomes

The student's current level of performance in each targeted domain is described in the IEP and is used by the team to

- select appropriate **student-specific outcomes**
- determine ways to adapt materials, instructional strategies, and assessment procedures
- assess student progress (see Red Flags chart on page 78)

The student's levels of performance when the IEP is developed serve as a baseline for assessment when the IEP is reviewed.

Student-specific outcome

is a term used for "goal" in an IEP for a student; it states what the student will learn, when this will be accomplished, and how the goal will be met.

IEP Domains

Depending on the individual student, some or all of the following areas of need might be addressed in the IEP:

- language—English, ASL (e.g., speech, vocabulary, grammar, pragmatics [social language], higher level language skills needed to develop reasoning, Theory of Mind, executive functioning)
- basic concept knowledge (e.g., quantity, size, directions, time, prepositions)
- listening skills (e.g., awareness/comprehension of sound, following directions)
- social skills (e.g., classroom routines, social rules, demonstrating responsibility, respect, problem solving, helping peers understand hearing loss)

- independence, self-advocacy, identity (e.g., hearing aid use and maintenance, requesting repetition/clarification, stating needs as a person who is DHH, identity as a Deaf or hard of hearing person)
- other areas as needed (e.g., behaviour, occupational therapy, physical therapy)

In developing the IEP, teams prioritize and categorize the identified needs into **domains**.

Communication Domain

The communication domain is often the main area of need for students with hearing loss, regardless of the student's age. The SLP, TDHH, AV therapist, ASL specialist, Deaf ASL instructor, or audiologist may suggest focusing on the following areas (these are suggestions—goals may vary, depending on individual student needs):

- Vocabulary
  - Early Years: directions and language of instruction, classroom, weather, holidays, adjectives/adverbs, basic concepts, curriculum
  - Middle and Senior Years: curriculum, language of instruction, current events, peer-related language (e.g., current slang, relevant social media, famous people in the news)
- Speaking Skills
  - All ages: speech sounds, voice quality, volume, intonation/pitch, rhythm/timing
- Grammatical Structures
  - Early Years: plurals, verb tenses, possessives, pronouns, question forms, adjectives/adverbs, different sentence types
  - Middle and Senior Years: clauses, passive voice sentences, hypothetical questions, writing paragraphs/essays
- Understanding/Use
  - Early Years: directions, idioms, multiple meanings, figurative language, humour, inferences, higher-level thinking skills, recognizing and correcting grammatical errors, Theory of Mind, executive functioning
  - Middle and Senior Years: opinion, sarcasm, persuasion, higher-level thinking and reasoning skills, Theory of Mind, executive functioning
- Pragmatics (may also fall in Social Skills Domain)
  - Early Years: take turns, start a conversation, maintain a topic, seek and give clarification, use appropriate register, retell information, interrupt appropriately, participate in a group

- - Middle and Senior Years: use the "in" language of peers, respect others' opinions, converse with the opposite sex, participate in clubs and teams
- American Sign Language
  - An ASL specialist or a Deaf ASL instructor may suggest development of the following areas: vocabulary, ASL grammar, handshapes, non-manual markers, classifiers, pragmatics, Deaf culture
- Augmentative Communication
  - Students who are DHH with additional needs may require a form of augmentative or alternative communication (e.g., PCS symbols, Boardmaker software, speech-generating device)
- Auditory Skills
  - awareness, discrimination, recognition, comprehension of sounds/voices
  - ability to detect and understand directions/sentences of increasing length and complexity in quiet and in background noise
  - ability to answer questions based on information provided orally only

PCS = picture communication symbols

Independent Living Domain

The TDHH, AV therapist, or ASL specialist may suggest focusing on the following areas to develop student understanding of being a person who is DHH and to develop skills in independence and self-advocacy:

- Knowledge—Develop an understanding of own hearing loss and its implications, including
  - parts of the ear and how it works; cause of hearing loss
  - parts of the hearing aid/CI/wireless audio system and how they work, how they help, and their limitations
  - the audiogram; identify own hearing loss; understand that the audiogram does not always reflect communication ability
- Coping Skills/Self-Advocacy—Develop own independence and self-advocacy skills:
  - Use a variety of coping skills—request repetition/clarification, avoid/reduce noise, use amplification/appropriate seating/interpreter, cope with teasing.
  - Request communication accommodations as needed.
  - Become aware of and access community supports, agencies, and associations for individuals who are DHH.

- Amplification—Develop an understanding of how the equipment works:
  - Put the hearing aid/CI/wireless audio system on independently, and adjust the controls as needed.
  - Use and care for the equipment appropriately.
  - Indicate malfunctions and fix if possible.
- Identity—Build own self-concept, identity, and self-esteem:
  - Identify personal implications of hearing loss.
  - Interact with others who are DHH.
  - Learn about Deaf culture.
  - Discuss self-identity—Deaf, hard of hearing, or hearing? What is the difference? Students may identify themselves differently, based on the communication partner or situation (e.g., a quiet versus noisy environment, a gathering in the Deaf community).

Further information is available in the Identity section, pages 27 to 34.

Students may also have needs in other domains, which should be included in the IEP as required.

Programming Review

A student's programming, adaptations used, and the IEP should be regularly reviewed to monitor student progress. Changes can then be made as needed to ensure the development of skills in all areas.

The following chart provides suggestions as to how to respond when programming (classroom and/or student-specific) is not meeting the needs of the students.

Red Flags	
Questions to Ask	How to Respond
Has the student had a change in hearing acuity?	Refer the student to the audiologist for re-evaluation.
Is the student wearing hearing aids/CIs/personal wireless audio system consistently?	Consult with the family/school to establish the need for consistent use of amplification.
Is the student making minimal progress (e.g., due to frequent absences from school or programming not meeting student's needs)?	■ Meet with school/family and establish need for consistent intervention and academic programming. ■ Consider additional/alternative supports for the student (e.g., IEP review/revision, increased resource/SLP/tutoring support). ■ Consider alternative modes of communication (e.g., visual supports, AAC, ASL, SSS).

Red Flags (continued)

Are there additional concerns regarding development, behaviour, language/learning, oral motor skills therapy/speech, and/or family support?	■ Refer to the clinical support team for assessment (i.e., SLP, psychologist, reading clinician, occupational therapist, physiotherapist, social worker, behaviour consultant). ■ Assist the family in/develop supports for improving communication skills in the chosen mode (e.g., listening/speaking, AAC, ASL).

Strategies for the Classroom

Even in a DHH-friendly environment, students with a hearing loss do not have access to the daily incidental language learning that hearing students have. This limited access is compounded if

■ background noise is present

■ the student receives limited benefit from amplification or does not use amplification consistently

■ the ASL signer has limited skill

■ the student has limited ability to interact with/learn from peers (i.e., has limited social skills)

Educators can be sensitive to this lack of incidental learning and provide more direct instruction whenever possible to help students in their acquisition of English grammar and to develop language knowledge and skills.

This section provides a variety of handouts outlining practical suggestions for developing different communication approaches, helping students acquire English grammar, building various listening and speaking skills, developing the everyday language knowledge and skills (such as vocabulary, following directions, Theory of Mind, critical thinking, and executive functioning) needed to succeed in the classroom.

Lack of incidental language learning experiences is reflected in all aspects of the curriculum.

Expect participation from students who are DHH in the same manner as from other students in the class.

Supporting Communication Approaches

ASL/EAL	AAC
To support the development of English as an additional language in the classroom, consider doing the following: ■ Support the development of the students' first language. ■ Incorporate visual supports in the classroom and curriculum. ■ Make what is implicit explicit. ■ Provide background information along with any new topics. ■ Include teaching methods that encourage classroom conversations. ■ Have students work in small groups. ■ Hold one-to-one conferences with students. ■ Work collaboratively with the teachers of the Deaf and hard of hearing. ■ Allow translation between English and ASL to facilitate comprehension. ■ Maintain students' motivation and self-concept by ensuring that they frequently experience success in classroom activities. ■ Incorporate language and cultural role models (adult guests who are DHH) within the classroom/school.	Consider doing the following to use AAC effectively in the classroom: ■ Encourage the use of the AAC system frequently and in all environments—at home, at school, and in the community. ■ Use AAC in the early stages of language development, ASL or English, to facilitate growth. ■ Use **aided language stimulation** techniques to enhance language growth. ■ Create materials with picture communication systems (e.g., PCS or PIC symbols) for the student to actively participate in all curriculum areas. ■ Classroom **adaptations** may include a labelled environment, adapted books, or adapted activities. ■ Enhance literacy skills by using picture communication systems with the words printed under them. ■ Encourage positive social interaction using an AAC system.

Aided language stimulation

is a naturalistic technique in which a facilitator models ways that symbols can be used for communication.

Adaptation

is a change made in the teaching process, materials, assignments, or student products to help a student achieve the expected learning outcomes.

For more information, see pages 42 to 46 in the Communication section.

Developing Communication Skills—ASL

The development of a student's ASL skills should be encouraged. To facilitate this, the educational team could do the following:

- Involve the ASL/education consultant from Manitoba Education as part of the school team.

- Have the student participate in ASL tutoring sessions with a native ASL user such as a Deaf adult or the ASL/education consultant, and/or during video chats with other students who use ASL.

- Encourage the student to participate in activities where they can interact with peers and adults who use ASL (e.g., networking day, get-togethers, Deaf community events, City of Winnipeg *Leisure Guide* DHH youth group activities).

- Encourage students to participate in Deaf sports, camps, and leisure activities.

- Ask a Deaf adult and/or the student to host an ASL club in the school so peers can learn ASL.

- Have high school students take advantage of the ASL challenge for credit option.

- Develop the student's ASL vocabulary and grammar.

- Play visually focused games.

📄 Developing Communication Skills—Listening and Speaking

Auditory Training	Speech	Oral Motor Therapy
The development of the student's auditory skills should be encouraged during all school activities. To facilitate this, the educational team could do the following: ■ Enhance classroom acoustics. (See Environmental Adaptations handout on page 69.) ■ Provide an alternative (quiet) location for activities that involve increased background noise (e.g., group or partner work, lunch). ■ Identify and resolve barriers to communication (e.g., background noise, poor seating arrangement, multiple speakers, pace, lighting). ■ Encourage the student who is hard of hearing to use communication repair strategies (e.g., "I heard _____"; "Did you say _____?"; "Please repeat."). ■ Encourage the student who is hard of hearing to understand their own hearing loss and amplification. ■ Encourage the student who is hard of hearing to advocate for their communication needs.	Classroom strategies to support accurate speech production include ■ responding to the content of the message ■ modelling accurate sound production in conversation and reading ■ reinforcing correct sound production ■ using visual supports	The following are some general strategies to use with students who are DHH and who appear to be having difficulty acquiring speech: ■ Auditory feedback is crucial. Amplification is required, as it plays a vital role in the acquisition of phonetic and phonological speech and auditory learning. ■ Daily speech practice is important for consistent progress. Structure therapy so that the student experiences success. ■ Therapy should be concrete. Set up situations to use the words in real settings. ■ Movement activities can often support speech development and build muscle coordination, phonation (uttering vocal sounds), relaxation, and/or activation of some muscles. Appropriate positioning of the body is also crucial. Occupational and/or physical therapists can be consulted for this input. ■ A multi-sensory approach is important. Auditory discrimination and mirror work is not enough. Use the following multi-sensory cues: — Auditory: The student listens to the therapist using an amplification system and imitates the therapist. — Visual: The student watches the therapist's mouth and uses visual cues, including hand signals and pictures. — Tactile: The therapist may use a tongue depressor to show the student proper placement for a speech sound. — Kinesthetic: The student is taught to make a hand signal together with the sound production, to pair large body movements or postures with words/phrases/sentences, and to touch pictures of words/phrases/sentences.

For more information about developing students' listening and speaking skills, see pages 50 to 54 in the Communication section.

Vocabulary and Concept Development

Strategy	Description
Theme-Based Approach	A theme-based approach helps the student draw connections. Share goals and themes with the school support team to ensure a consistent approach.
Preview/Review	Preview/review concepts and vocabulary. Provide vocabulary lists in advance of instruction; give definitions with examples, jot down key words and new vocabulary on the board as they arise, and highlight important facts. Previewing provides a knowledge base for the student to link new information to previously mastered concepts. Encourage students to listen/watch for key words during instruction. Familiarity with the new words will help the students to follow classroom instruction/discussions. Frequently review the vocabulary/concepts in a variety of meaningful contexts (e.g., keep a word bank). Expose students to examples of new words that may have different meanings.
Visual Strategies	Use graphic organizers, semantic webs, and other visual teaching strategies. Semantic webs and graphic organizers help to link new information to known schema. New concepts are best taught in connection with known concepts. Attempt to discover what the student already knows about a concept. Refreshing past knowledge will help the student assimilate the new information. This helps the student create a category for the new concepts.
Rephrase	Rephrase information and new words in several ways and in different contexts.
Appropriate Language Level	Use language at the student's level; provide reading material on the same topic at a lower-language level if necessary.
Clarify	Provide clarification of assignment directions and test questions when needed. It is helpful to look at tests before the student takes them and troubleshoot for new vocabulary words or complex language structures.
Check Comprehension	Check student comprehension periodically. Ask the student to rephrase or summarize, and avoid using "yes/no" questions to judge if the student understood material.
Major Concepts	Focus on major concepts, rather than details, and on the quality of material rather than quantity.
Concrete to Abstract	Begin explanations with concrete examples, and work from them to the more abstract ideas.
Summarize	Develop the habit of summarizing salient points for the class.

For more information about developing vocabulary and concepts,
see pages 55 to 57 in the Communication section.

Home-School Connections for Developing Vocabulary and Concepts

Strategy	At-Home Examples	At-School Examples
Categories Introduce, teach, and reinforce vocabulary within categories.	■ At home, an example might be naming all the clothes in the closet, or all the food in a cupboard, or all the colours of the crayons.	■ At school, an example would be grouping words/concepts into specific curricular topics (science, mathematics, social studies, physical education/health education, etc.).
Pre-teaching Pre-teaching can be done by selecting the key vocabulary or concepts from an activity or lesson and reviewing these with the student beforehand.	■ At home, this might mean discussing some of the important words in a story and making sure your child understands them before reading a bedtime story.	■ At school, this could involve reviewing the names of the chemicals and apparatus needed for a science experiment before conducting the lab activity.
Building Background Knowledge Always connect new information to the student's personal experiences. This will help to build background knowledge and make new information more meaningful.	■ At home, this could be reminding your child about the things you did at the beach while watching a television program that takes place near the water.	■ At school, it might involve getting students to talk about times when they were sad or upset in order to relate to how a character in a novel is feeling.
Visual Support Provide meaningful visual support.	■ At home, this could involve putting all the ingredients and the recipe book out on the table when you are making cookies.	■ At school, timetables and schedules can be displayed, charts or graphic organizers can be used to structure work, and written words and pictures can be added to help clarify spoken or signed messages.
Hands-On Activities/ Exploration Many students learn best by being actively involved in the process. Incorporate real objects and hands-on exploration as much as possible.	■ At home, this might mean letting children do things for themselves under your supervision (e.g., cleaning, cooking, shopping, banking).	■ At school, this could include using manipulatives for mathematics, experiments in science, projects in social studies, and drama in language arts.

Developing Language Skills—Directions, Questions, Storytelling

Following Directions	Wh- Questions	Storytelling
There are strategies that a teacher can incorporate on a daily basis in the classroom setting to aid a student who is D/HH:	The following strategies will help students with wh- questions:	Strategies to promote understanding and use of narratives for students could include the following:

Following Directions

There are strategies that a teacher can incorporate on a daily basis in the classroom setting to aid a student who is D/HH:

- First alert the student that a direction is going to be given by using a visual (e.g., flashing the lights) or verbal (e.g., "Listen, boys and girls") strategy.
- Make sure the strategy you use is consistent so the students will learn to stop what they are doing and attend to the teacher.

There are also strategies to help the students understand and remember the directions. These could include the following:

- simplifying
- demonstrating
- using visual supports such as gestures, objects, or writing the instructions on the board or in an agenda book

For example, a direction such as, "Everyone, I want you to finish what you are doing now, but before you sit down for story time, make sure your tables are tidy" may be very confusing for a student who is DHH. The student may not understand the following:

- the concepts used in the directions: before/after
- the complex grammatical structure (embedded clause): "before x, do y."
- the vocabulary: everyone or tidy

The direction could be made easier by rearranging the order of the message, breaking it down into shorter phrases, and changing the vocabulary. For example, "Boys and girls, finish now. Put away your pens and paper. Sit down for story time."

Use gestural and/or verbal cues to indicate the order of the direction (e.g., first, second, third).

Hold an object that represents part or all of the direction (e.g., the box for the pens and paper) to give the students a cue indicating what they are to do.

Wh- Questions

The following strategies will help students with wh- questions:

- use of visuals (e.g., pictures of objects/ people) to provide context for the question
- paraphrasing the question or using a cloze technique for responses (e.g., "What did you do on the weekend?" or "On the weekend I _____.")
- providing example responses to guide the student toward the expected answer (e.g., "Where is the dog? Is he under the table? Is he with the cat?")
- direct teaching of how to respond to wh- questions and use of context as an assistive device
- guessing games (e.g., "What's in my pocket?")
- use of activities to build vocabulary and other language skills

Storytelling

Strategies to promote understanding and use of narratives for students could include the following:

- Make photo or picture journals of their past experiences.
- Act out or role-play stories.
- Preview unfamiliar concepts and vocabulary within the story.
- Provide visual cues such as objects, pictures, or a story outline to help tell a story in sequence.
- Use appropriate questions and comments to assist students to comprehend a story or construct their own story.

For more information about developing language knowledge and skills, see pages 57 to 59 in the Communication section.

Developing Theory of Mind Skills

Schools can support the development of ToM in the following ways:

■ Provide a language-rich environment so the student receives the best exposure possible to conversation and incidental language. For those with auditory skills, encourage the consistent use of amplification and a listening system (FM, digital).

■ Introduce and explicitly use feeling words and mental state verbs (e.g., *think, know, imagine, believe, hope, remember, guess, wish, forget, realize*). Describe the feelings of others (e.g., "she is crying because she got hurt"), talk about your feelings/beliefs/values (e.g., "I believe we should all be kind to one another.") and use specific questioning to introduce concepts (e.g., "Which is your favourite? I wonder what Miss S's favourite is?"). Talk about misunderstandings and confusions.

■ Foster pretend play and role-playing as they involve taking on someone else's perspective.

■ Read books with characters who share emotions, desires, and beliefs (e.g., *Little Red Riding Hood, The Rainbow Fish, The Diary of Anne Frank*). Encourage the student to make predictions and ask what the characters might be thinking or saying. Use animated voices when reading aloud to help portray the emotions behind the words.

■ Discuss past, present, and future events, focusing on the feelings around those events. Use conversation starters such as "I wonder _____. Do you remember _____? What do you think she meant when she said _____?"

■ Use writing tasks such as creating text for a wordless book, writing in the role of a character, and writing for a range of audiences to provide opportunities for children to demonstrate their ToM understanding.

■ Look online and contact your SLP, TDHH, or AV therapist to find strategies, games, materials, and other resources that focus on ToM development.

For more information about developing Theory of Mind skills,
see pages 59 to 60 in the Communication section.

Developing Critical Thinking Skills

Schools can support the development of critical thinking skills in the following ways:

Classification Skills

- Play classification games.
- Discuss why a certain item may or may not fit in a specific classification—discuss similarities and differences.
- Group vocabulary words by curriculum areas, by topic, and/or by other classifications.
- Create word webs and mind maps to show links between concepts.
- Organize and sequence ideas in each subject area.

Comparing-and-Contrasting Skills

- Compare and contrast objects for various attributes (e.g., size, shape, colour, function, what it is made of). Classify those with like attributes together.
- Compare and contrast curricular concepts (e.g., simple machines in science, homes/foods/clothing of those in various communities in social studies, the philosophies of various political groups).
- Compare and contrast people's features, likes/dislikes, attributes.
- Compare and contrast actions and personalities of characters in stories/novels.
- Develop analogies.
- Use comparison charts and Venn diagrams.

Answering True/False Questions

- Play games such as I Spy and 20-Questions.
- Have students interview one another.
- Use inquiry-based learning.
- Look at prior knowledge and new information. How do they fit together? Evaluate the information.
- Do activities that focus on opinion versus fact. Engage in debates.

Making and Explaining Inferences

- Explicitly teach inferencing skills using real-life situations, sentences, paragraphs, and stories/novels being read in class. Help students to see the implicit factors and to "read between the lines."
- Use visuals to chart the concepts and schema.
- Use guided reading.
- Analyze pictures and "read" wordless books so that students must use inferences to find the meaning.
- Add thought bubbles to show character thoughts in pictures in books.
- Identify a character's traits through what they say and do.

Identifying Causes of Events

- Use play, pretend play, and science experiments to help students develop an understanding of cause/effect.
- Teach cause/effect vocabulary (e.g., *because of, since, as a result of, so, therefore, this resulted in, if/then*).
- Use graphic organizers to show relationships between events and to illustrate cause and effect.
- Analyze events in stories/novels, events that happen in the classroom and school, and social interactions to determine causes/effects.

Problem Solving

- Engage students in real-life problem-solving tasks.
- Use a problem-solving framework, such as the one in Appendix G, to guide students through a step-by-step approach. Try multiple solutions and discuss why they did or did not work.
- Emphasize that a problem can be solved in multiple ways—there is not necessarily one "right" way to solve every problem.
- Play games and do activities where students must draw conclusions, find facts, and rely on reasoning.
- Ask open-ended and critical thinking questions.
- Form hypotheses together: "What do you think will happen if you do _____?"
- Pause and give students time to think.
- Encourage creativity.
- Explicitly teach sequencing, application, analysis, synthesis, and evaluation skills.

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For more information about developing critical thinking skills,
see pages 60 to 61 in the Communication section.

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📄 Developing Executive Functioning Skills

Schools can support the development of EF skills in the following ways:

Organization

- Use overt self-talk.
- Systematically teach organizational strategies.
- Provide a structured learning environment and help the student to see how it is structured.
- Sort, classify, and organize information (e.g., categorize vocabulary, distinguish between main idea and details, help students learn how to take notes and how to organize an essay).
- Provide graphic organizers and templates for data collection and organizing information.

Planning

- Use systematic instruction—use rubrics, finished work samples, et cetera.
- Use calendars, schedules, and timelines to help set goals and to provide visual reminders.
- Provide guides, checklists, and templates for goal-setting, project planning, and scheduling.
- Model think-alouds of planning for various activities.
- Teach how to break long-term goals into short-term objectives.

Flexible Problem Solving

- Help students understand figurative language and multiple meanings of words.
- Expand vocabulary to high levels.
- Teach problem-solving skills (e.g., What is the problem? What are options? What is my plan? Am I following the plan? How did I do?).
- Play games to develop skills in reading facial expression, other non-verbal cues, and tone of voice.
- Play games that involve planning and problem solving (e.g., chess, Battleship).
- Provide opportunities for students to shift ideas and be mentally flexible as they make decisions, solve problems, and engage in learning.
- Use open-ended questions.

Working Memory

- Get the student's attention before sharing information.
- Give verbal or visual cues, and use visual teaching strategies.
- Avoid information overload, and reduce distraction.
- Repeat, rehearse, and review to help build retention of information.
- Teach strategies for recalling information, such as chunking information together.
- Think back and reminisce about events.
- Build language skills by playing games (e.g., What is black and white and starts with *s*? Combine these sentences without using the word *and*).
- Use "before, during, and after" reading strategies, such as using strategic questioning, to build links to known information, to the student's own experiences, and to ToM skills.
- Build background knowledge.

Self-Monitoring

- Help students develop task checklists.
- Help students use sticky notes to remember information.
- Give students additional time to check and correct their work.
- Give feedback on the effort shown and the process followed as well as on the result of a task.
- Teach students to identify what a finished task looks like and then to evaluate their own performance on the task.
- Ask questions and provide templates to guide self-monitoring and reflection.
- Use differentiated models of self-assessment (e.g., role play, peer reviews).

Inhibitory Control

- Help students learn to delay gratification (e.g., use a visual timer, class rewards).
- Prepare for situations requiring impulse control by reviewing them in advance.
- Cue students before activities and reward self-control.
- Practise response inhibition by role-playing and using songs/games (e.g., Simon Says, Bop-It, B-I-N-G-O).

Higher-Level Reasoning Skills

Students who are DHH may lack the language ability to understand and use abstract or higher-level concepts. Difficulties with higher-level language/reasoning skills interfere with the student's ability to remember, understand, apply, analyze, evaluate, and create at concrete to abstract levels (revised Bloom's Taxonomy). These skills may need to be explicitly taught and/or reinforced at a classroom or individual level. Instruction with an experiential component helps students generalize and transfer the skills to everyday situations. Role-playing and brainstorming activities are very effective with students who are DHH.

Figure 16	**Revised Bloom's Taxonomy**

Cognitive Process Dimension

Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Knowledge Dimension
Identify	Predict	Use	Construct	Reflect	Create	**Metacognitive**
Recall	Clarity	Carry Out	Integrate	Judge	Design	**Procedural**
Recognize	Classify	Provide	Differentiate	Determine	Assemble	**Conceptual**
List	Summarize	Respond	Select	Check For	Generate	**Factual**

See Appendix F for an in-depth outline of the revised Bloom's Taxonomy.

An effective tool in teaching a problem-solving process is the use of external frameworks or visuals such as the Problem-Solving Framework in Appendix G.

Literacy Skills

Hearing loss can add challenges to the already difficult jobs of learning to read and write.

The Laurent Clerc National Deaf Education Center has identified nine areas of literacy that should be used with students who are DHH for a balanced literacy program:

- reading to students
- language experience
- shared reading and writing
- guided reading and writing
- writers' workshop
- research reading and writing
- dialogue journals
- journals and logs
- independent reading

The research on students who are DHH indicates that "the most effective approaches are those that emphasize semantic elaboration techniques such as use of semantic maps, semantic feature analyses, word maps, and classroom discussions of words" (Loeterman, Paul, and Donahue).

Areas of Potential Difficulty in Reading and Writing

In both reading and writing, students who are DHH are often bound by the literal meaning of words and often have difficulty with semantics, syntax, morphology, and irregular rules of grammar. Difficulties in reading and writing may occur at various levels:

- phonological awareness (manipulating units of sound)
- word level (gaps in vocabulary concepts)
- sentence level (grammar and sentence patterns)
- paragraph level (sequencing, main idea, retelling)

Phonological awareness can be placed on a developmental continuum, beginning with basic listening skills and progressing through an ability to identify and create rhyme and alliteration, to distinguish words within sentences, syllables within words, and onset and rime within words, until a child is able to manipulate phonemes within words in a variety of ways.

Phonological awareness is highly related to later success in reading and spelling. These skills emerge between birth and Kindergarten.

| Figure 17 | **Phonological Awareness Continuum** |
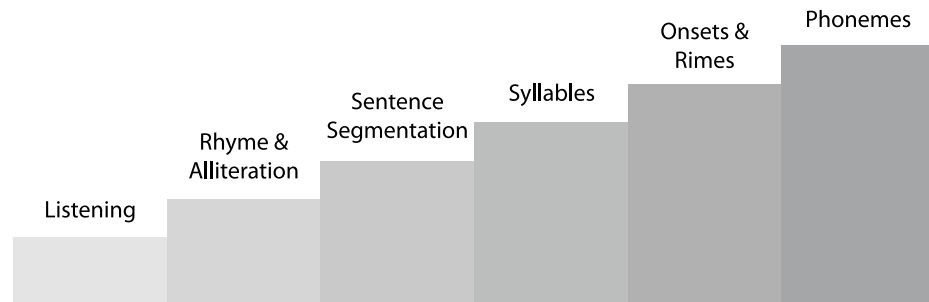
Supporting the Development of Phonological Awareness

Phonological awareness is directly linked to success in literacy skills. Although most children develop this awareness incidentally, students with hearing loss may require a more direct or explicit method of instruction. Students using ASL would benefit from a visual phonics program (e.g., Touchphonics and/or Explode the Code by EPS Literacy and Intervention).

Bridging the Language Gap during Language Arts Instruction

Students with hearing loss often have reading levels below that of the rest of the class, due to language difficulties. The major challenge in teaching language arts to students who are DHH is determining the level at which the students' problems arise.

Figure 18

Literacy Pyramid

Decoding and comprehension skills

Vocabulary, grammar, syntax, semantics

Knowledge of general concepts and experiences
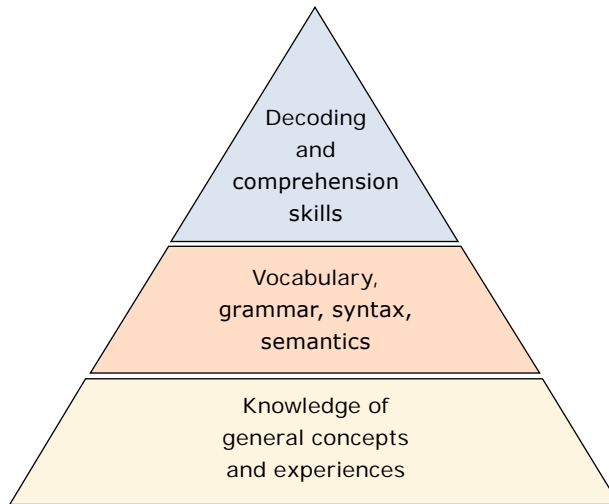
The bottom two sections of the pyramid are particularly problematic for students with hearing loss. Students may have a concept and language problem rather than a reading problem.

Students may understand what you mean when you say it or sign it, but not understand when it is in print.

Vocabulary is a predictor of reading ability. While vocabulary is necessary, it is not sufficient to move reading past early levels. Comprehension of grammar and sentence structure, and higher-level thinking skills are required.

Additional information on literacy development is available in Appendix H.

Figure 19   *The Importance of Comprehension*

decoding + comprehension = reading

The importance of comprehension in the development of literacy skills cannot be overemphasized. Rote reading skills alone do not equal reading comprehension. A student may read confidently at a Grade 4 level, but be unable to retell the information or answer any questions beyond a Grade 2 comprehension level.

Gaps in reading comprehension often increase over time, as the student's growth in language does not keep pace with the rapidly increasing language and abstract concept levels presented in curriculum content

Please see Appendix I for an illustration of reading comprehension.

areas. The emphasis on paragraph comprehension and the need for higher-level thinking/reasoning skills further compound the situation.

Specific areas of concern are outlined in the chart on page 96.

Specific strategies to use to develop students' reading and writing skills follow on pages 97 to 99.

Language and Literacy Strategies Used by Teachers of the Deaf and Hard of Hearing

Teachers of the DHH use a variety of language and literacy strategies to build students' knowledge and skills. The following chart outlines some of the most popular strategies:

| Figure 20 | **Language and Literacy Strategies** |

Vocabulary
- word play
- pre-teaching vocabulary
- graphic organizers
- visuals/pictures
- games

Conversation Skills
- role play
- modelling
- questioning & conversation techniques
- games
- flashcards

Alphabetic Principle
- text strategies
- phonemic awareness activities
- letter play
- word families

Fluency
- text strategies
- phonemic awareness activities
- repetitive reading
- pre-teaching vocabulary
- chunking of phrases

Comprehension
- question techniques
- prediction
- main ideas
- summarizing
- pre-teaching

Writing
- journal writing
- visual strategies
- modelling
- writing for a variety of purposes
- editing techniques

Source: Cannon, Joanna Erin. "Evidence-Based and Best Practice Literacy Strategies Used in BC: Results from an Online Survey Study of Teachers of the Deaf and Hard of Hearing." Canadian Association of Educators of the Deaf and Hard of Hearing Conference, 25 Oct. 2013, Kelowna, BC. Reproduced with permission.

Please see Appendix H for specific examples of strategies.

Specific Areas of Potential Difficulty

Meaning (Semantics)	Grammar (Syntax)	Parts of Speech and Function Words	Irregular Rules of Grammar
A student may misunderstand word meanings and need direct teaching of the following: ■ words with multiple meanings (e.g., *bat*, *run*, *light*) ■ categorical language (e.g., hockey and swimming are *sports*; a *dog* could be a husky or a poodle) ■ vocabulary expansion (e.g., walk→trot, stagger, lope) ■ words denoting an auditory event (e.g., whisper, rustling leaves) ■ function words or words that have no meaning except in context (e.g., *then, so, because of, however*) ■ similar sounding words (e.g., *bluff, blush*) ■ intonation and stress (e.g., in the question, "Why don't you do your homework?" the tone could be angry, calm, or questioning) ■ abstract concepts (e.g., equality, judgment, friendship, time concepts) ■ figurative language (idioms, metaphors) ■ higher-level thinking (inference, analysis, evaluation, metacognitive skills)	Difficulty with syntax frequently interferes with the student's comprehension and production of English. The student may ■ use mainly subject-verb-object patterns ■ tend to write sentences that are simple, short, and rigid ■ join sentences excessively ■ primarily use concrete action verbs ■ insert several words where one would suffice (due to a lack of vocabulary) ■ read passive sentences as active (e.g., "Mr. White was chased by a dog" is read as "Mr. White chased a dog") ■ misinterpret embedded clauses (e.g., "The hunter who shot the moose ran toward the car" is read as "The moose ran toward the car"—the student focuses on the nearest subject-verb-object)	Students may ■ omit or incorrectly use markers for verb tense and number (e.g., "Yesterday we walk store" for "Yesterday we walked to the store") ■ omit or demonstrate confusion with possessives ("That my dad jacket" for "That's my dad's jacket") ■ omit auxiliary verbs such as is or was (e.g., "He my brother" for "He is my brother")	Irregular rules of grammar may also prove frustrating for students. These rules include ones around ■ language of quantity (e.g., "I looked at some water" is correct, yet "I looked at some sun" is not) ■ verb tense (e.g., "He was driven to the airport" is correct, yet "He has arriven at the airport" is not) ■ plurals: (*house* becomes *houses*, but *mouse* becomes *mice*)

For fluent reading comprehension, the rapid access to the meanings of words during reading has to be automatic rather than conscious and deliberate. (Marschark, Lang, and Albertini 164)

📄 Suggestions for Reading with Students Who Are DHH

Strategy	Explanation
Visual Organizers	Use semantic webs, story maps, and other visual organizers to build concepts and link language: emphasize development of schema and prior knowledge before reading.
Vocabulary in Different Contexts	Use targeted vocabulary words repeatedly in different contexts.
Meaningful Context	Teach skills in the context of whole and meaningful literature.
Sentence Patterns	Use repetitive sentence patterns—gradually introduce complex sentences.
Material Connected to Experience	Choose material that is based on concrete and familiar experiences to create a meaningful link between the text and the student's experience.
Appropriate Language Level	Provide individualized instruction using material at the student's language level: ■ Choose the same story written at a lower language level (e.g., *The Diary of Anne Frank*, plays of Shakespeare). ■ Use an alternative book on the same theme (survival). Choose materials with controlled levels of vocabulary and sentence structures. ■ Rewrite or adapt materials to an easier level if necessary.
Text-Based Factors*	Consider the following text-based factors: ■ Vocabulary level—Is the student familiar with the vocabulary in the story? ■ Sentence length and complexity—Specifically teach sentence structures (e.g., simple noun-verb to complex sentences that use clauses). ■ Figurative language, abstract concepts, inferential knowledge ■ Cohesion of text—Is the text organized and easy to follow (e.g., logical sequence of ideas)? ■ Illustrations—Are they used in agreement with the text to improve comprehension? ■ Familiar discourse structure or genres (e.g., "Once upon a time," poem, fable, song)
Reader-Based Factors*	Consider the following reader-based factors: ■ Interest and motivation ■ Prior knowledge or familiarity—Characters or settings that are familiar (e.g., camping) encourage comprehension. ■ Purpose—Direct purpose encourages comprehension.
Preview/Review	Preview and/or review vague or easily misunderstood phrases (e.g., "He broke off suddenly" means he stopped talking suddenly).
Study Skills	Provide direct instruction on how to study (e.g., know textbook formats, underline/circle main ideas).
Scaffold	Support students in using newspaper articles, the Internet, and other expository text that uses a high level of language.
Extend	Develop higher-level language and thinking skills.

* Source: Ward, Rita, Verena Krueger, and Judith MacDougall. "Adaptations of the Reading Program." *Adaptation of Language Arts Curriculum for Teaching Hard of Hearing Kindergarten to Grade 2*. Winnipeg, MB. 1981. 61–63. Adapted with permission.

Reading Goals

Area for Improvement	Strategies to Achieve Goals
Vocabulary Development	Provide background information, link new knowledge to existing knowledge, ensure students know the purpose for reading, and pre-teach new vocabulary and new language structures.
Comprehension	Help students to get the facts, read beyond and make judgments, recall word meaning from context, discuss word meaning, answer questions from the text, relate ideas in the text, and follow the parts of the story.
Drawing Conclusions/ Making Inferences	Have students practise this important comprehension sub-skill that students who are Deaf/hard of hearing frequently miss—noticing subtleties and clues. Practise with abstract questions before, during, and after reading.
Sequencing Events	Choose events that are important to the story, teach sequential words, and practise sequencing with cartoons.
Using Context Clues	Use pictures to develop student understanding of the storyline.
Predicting Story Outcomes	Help students learn to use contextual clues through abstract questioning (the student needs knowledge and comprehension of the story to respond).
Paraphrasing	Help students to remember, choose, and sequence relevant information as they paraphrase material for various purposes, such as a book report.
Word Attack Skills	Help students to use language skills and context to unlock meaning—this may be difficult for students with hearing loss.
Identifying Problem and Solution	Use story mapping to help students to identify the problem and solution of the plot.
Identifying Main Idea	Teach students to identify the main idea by modelling how a good reader distinguishes key ideas from supporting details.
Discussing/Describing	Have students practise discussing and describing different elements of the story—literature circles provide a good context for this.
Identifying Different Story Types	Offer students a variety of literature (fiction and non-fiction) and demonstrate the differences among the genres.

📄 Suggestions for Writing with Students Who Are DHH

Strategy	Explanation
Determine specific areas of need	Use the student's writing samples to determine areas of need.
Process approach	■ Teach the steps of a writing process. ■ Model the writing process and co-construct text. ■ Focus on writing tasks that are meaningful/purposeful and that integrate content, form, and use. ■ For first-draft writing, focus on ideas rather than correct grammatical structures. Students struggling with the difficult task of choosing the correct vocabulary and grammatical structures may become overwhelmed with the writing process. ■ Have students rehearse (orally or in ASL) each sentence before printing it as a bridge between spontaneous language and more structured written language. ■ Collaborative writing with a peer with similar writing abilities can make the task more enjoyable. ■ Explicitly teach composing strategies.
Assist with organization	Help the student with sequencing, main idea, paragraph writing, maintaining topic, and editing.

Direct instruction	■ Provide direct, explicit instructions on these key areas:
	  ▪ text structure (story grammar and various types of expository writing)
	  ▪ cohesion—how to write cohesive paragraphs and overall stories/pieces
	  ▪ summarization
	  ▪ sentence combining
	  ▪ micro-level skills—spelling and other writing conventions
	  ▪ purpose—help students plan and compose their writing for a purpose (e.g., story, opinion, persuade)

Mechanics in context	■ Teach grammar and mechanics in context, at the editing stage, and as items are needed. ■ Draw attention to the conventions of written English. Students tend to omit word endings as these sounds may be out of their hearing range and are not meaningful in and of themselves (the final /s/ on plurals, possessives, and verbs or the /ed/ ending on past-tense verbs). ■ Remind the student to check work for consistent verb tense.
Read aloud	When doing self-edits, have the students read their work aloud. Often students can become aware of more grammatical and word usage errors with the support of auditory cues than when they read silently.
Feedback	■ Provide specific, descriptive, non-judgmental feedback. ■ Offer direction on how to improve the writing and build on the student's current writing abilities. ■ Take into account the student's language skills. ■ Editing feedback is more effective when the student self-edits first.
Mentor texts	Use the writing of professional authors as models to teach specific literary devices (e.g., symbolism, metaphor).

Talking and signing at the same time can be very confusing for some students who have not developed full grammar or syntax in either ASL or English. For these students, it is best to either sign or talk but not both at the same time. Ask the students what they would prefer.

"And I believe that Deaf kids are just as smart as hearing kids and with sign language we can do anything." (Spradley and Spradley 281)

Inclusion for Students Who Are Using ASL

The following ideas can assist in providing appropriate educational programming for students who are using ASL:

■ The school team members (e.g., classroom teachers, administrators) learn basic everyday signs such as "Hello" and "How are you?" so that they are able to communicate directly with the students who are DHH.

■ Students in the classroom/school learn sign language. A language is best learned from a native speaker of that language. If a student who is DHH runs the Sign Club, an adult who is Deaf can work with the student to ensure cultural and linguistic accuracy. An interpreter (or another hearing person) does not have ASL as a first language.

■ Regular interaction with peers and adults who are DHH is important so that the student has positive adult role models who are DHH to develop a healthy sense of self and to be able to transition successfully to adulthood.

■ Bring Deaf and hard of hearing resources such as the *The Canadian Dictionary of ASL* (Bailey and Dolby) or *Deaf Heritage in Canada: A Distinctive, Diverse, and Enduring Culture* (Carbin) into the classroom.

■ Provide communication access (e.g., interpreters, notetakers) for all school-related activities including intramurals, field trips, guest speakers, meetings, clubs, sports activities, and so on.

Differentiated Instruction for Students Who Are Using ASL

Students who are DHH are as capable of complex, abstract thought as their hearing counterparts. Many EAL (English as additional language) teaching strategies are helpful for working with students who use ASL. The following excerpt from the 2006 *English as an Additional Language (EAL) and Literacy, Academics, and Language (LAL), Kindergarten to Grade 12, Manitoba Curriculum Framework of Outcomes, Draft* (11) describes how learners who use ASL fit into the variety of EAL students in Manitoba schools:

Teach to the eye—use visuals and examples whenever possible.

EAL and LAL Learners in Manitoba Schools

Students who are Deaf or hard of hearing, and whose first language is a signed language	These learners may	Students with a signed language as their first language will enter the Manitoba school system throughout K–12
	■ have been born in Canada or elsewhere	
	■ have various levels of fluency in the signed language of their home country or in American Sign Language (ASL)	
	■ use ASL or a signed language as their first language and develop English through reading and writing as their second language	
	■ have language(s) other than English as their second language	
	■ attend a mainstream classroom, cluster program, or The Manitoba School for the Deaf	

Some examples of differentiated instruction include the following:

■ Use an interpreter scribe for assignments and tests, especially for students with emerging EAL skills but strong ASL skills.

■ Use alternative assessment methods such as oral exams, mind mapping, and graphic organizers.

Note: Music and jokes based on English and "sounds-like" examples may be difficult or impossible for the student to access/comprehend. Humour, poetry, and song are visually based in Deaf culture. In these situations, the student could be given an alternative assignment.

Reading and Writing with ASL

A variety of investigations have indicated that readers who are Deaf, like hearing readers, use a combination of whole-word recognition, phonological or sound-based recoding, and orthographic (spelling-based) recoding to hold information temporarily in working memory. Some readers who are Deaf also recode English print into sign, at least some of the time (Marschark, Lang, and Albertini).

There may be a practical explanation for the writing difficulties students who are Deaf experience—students may be overburdening themselves with an effort to articulate thoughts in ASL and English at roughly the same time. Even if students know all the grammatical rules to be applied to an English draft, writing process theory suggests that preoccupation with language constraints in the early stages of writing can create a cognitive overload, adversely affecting the writer's ability to manage such other important writing concerns as what the writer wants to say. The writing process for students who are Deaf is further complicated by the need to code-switch (Mozzer-Mather).

ASL is unique, just as all languages are unique. Word-for-word translations from one language to another are not possible, due to different grammar rules and the cultural aspects of language. Therefore, an English sentence translated word for word into French would not create a grammatically correct French sentence. The same is true for translating English into ASL. Thus it is important for students who use ASL to first read the passage and then translate the overall concepts into ASL, rather than doing a word-for-word translation. Conversely, students who use English with sign supported speech (SSS), rather than ASL, may sign word for word when reading a passage (as they are signing in English rather than ASL).

ASL is a truly rich language that has its own forms of literature:

- ASL storytelling
- ASL poetry
- Deaf jokes
- ASL games (e.g., the Elephant Game, Guess Who?, handshapes)

The following handout provides suggestions for reading and developing vocabulary with students who are Deaf and/or using ASL.

📄 Suggestions for Reading with Students Using ASL

Strategy	Description/Example
Sign placement	Sign phrases on or with a book (e.g., sign tree beside a picture of a tree).
Pair text and sign	Point to the text, give an explanation in ASL, and then point back to the text.
Make connections	Make real-world connections between the text and the student's experiences.
Maintain attention	Encourage student involvement by maintaining eye contact with the student.
Use body language	Use facial expressions and body posture to demonstrate character changes.
Use non-manual signs	Use non-manual signs, such as raising eyebrows to indicate questions.
Use finger-spelling	Finger-spell words you want to emphasize. Practise finger-spelling all new words even if there are signs for them.
Read student books	Encourage students to write or dictate books—the story can be read frequently by the student author.
Keep word banks or personal dictionaries	Students each keep their own file box of word cards or a personal dictionary. When new words are encountered in print, they can add them to the file.
Provide choice	Use a variety of books—allow students to choose books that are of interest to them.
Play with new words	New words should be addressed before students read the story. Students can play games such as Pictionary, Concentration, or Go Fish.
Monitor students' knowledge of concepts	Be sure the students know a concept before asking them to spell the word.
Spot-check students' spelling	Use pictures and signs to help them write down the correct spellings.

Supports for Students Who Are DHH

In addition to a DHH friendly environment and the use of appropriate instructional strategies, students who are DHH often require other classroom supports. These supports can include tutorial sessions, ASL-English interpreting, oral interpreting, or computerized notetaking.

Tutorial Sessions

Students who are DHH often benefit from regularly scheduled tutorial sessions, focusing on student-specific outcomes and curriculum-based language. These sessions are typically carried out by the educational assistant, ASL-English interpreter, signer, or computerized notetaker under the direction of the school team who have planned the content/lessons. Support team members may be directly involved in providing remedial programming and/or modelling tutorial sessions, depending on the IEP goal (this could include the TDHH, resource teacher, SLP, ASL specialist, AV therapist, psychologist, behaviour specialist, OT, and PT).

The amount and frequency of tutorial support for the student with a hearing loss will depend largely on the student's needs and the teachers' goals. It is important for the tutor to meet regularly with the school team to review IEP goals and upcoming classroom topics.

Tutoring a Kindergarten student can be entirely different from tutoring a Grade 12 student. Generally, as students progress in their education, they will become more responsible for the content of their tutorial sessions. An elementary tutorial session will be planned by the school team and led by the person conducting it. A high school tutorial session will focus and build on what the student wants to be supported in.

Working with Tutors: Information for Classroom Teachers

Tutorial sessions usually include

- development of student-specific goals as outlined in the IEP
- language development—modelling and expanding language, helping edit written work, and assisting with organization of thoughts
- daily previewing and reviewing of key vocabulary/curriculum-based language
- checking for comprehension and supporting expansion of ideas
- ensuring that the student understands assignment directions and is completing the work appropriately

Students benefit from daily tutorial sessions to preview/review curriculum content, particularly in core subjects. Older students can receive tutorials during spares; younger students can have sessions built into the timetable.

A low-traffic area with few visual distractions/ minimal ambient noise is ideal for tutoring. ASL is visual: a private tutoring space ensures that conversations are not accessible to observers. Ambient noise may interfere with the student's ability to use residual hearing/ amplification.

- assisting the student in developing study skills and preparing for texts/exams by reviewing the format of upcoming tests and practising specific types of test questions
- using visual and concrete strategies when possible, such as adapting board games, to create a fun and motivating session

For more information on strategies, please refer to page 81 of this section

ASL-English Interpreting

Students who use ASL require ASL-English interpretation to have full access to communication in the classroom and in all school activities throughout the day. Full access to language and communication is critical for full access to learning, social interaction, and emotional development.

> Access to language opens doors not only academically, but socially and emotionally as well. "Language is multi-dimensional. It is key to our understanding of culture, social understanding, self-awareness, perception of life chances and interpersonal communication. Given the importance of language, it is essential that careful consideration be given when hiring interpreters." (Family Network for Deaf Children and Westcoast Association of Visual Language Interpreters 11)

ASL-English interpreters possess a language fluency that allows them to interpret smoothly and accurately.

ASL-English interpreters are professionals who have a degree or diploma from a recognized ASL-English interpretation program (AEIP). This post-secondary training provides graduates with knowledge of language systems, interpreting theory, cross-cultural communication, and ethical decision making. They are fluent in the languages they interpret, are qualified to interpret in most settings, are committed to following the code of professional conduct, and are highly knowledgeable about the role of the interpreter. They reduce linguistic, cultural, and physical barriers.

Signers are people who know some ASL, and are not trained interpreters. The skills of signers in Manitoba schools vary greatly from those who know only a few signs to those who are rather fluent. Signers may be able to communicate their own thoughts but may not be able to interpret the thoughts of others. It is extremely important that schools hire staff with a level of competency in ASL and knowledge of the interpreting process to ensure that students who are DHH have access to communication and to learning.

The Manitoba Association of Visual Language Interpreters (MAVLI) and the Manitoba Cultural Society of the Deaf (MCSD) formed a partnership, in conjunction with other stakeholders, to develop an educational DVD called *Best Practices in Educational Settings—Making an Informed Choice: Trained Interpreters versus Signing EAs.* It is designed to illustrate best practices for interpreting in the classroom that will support the educational and social well-being of signing students who are Deaf or hard of hearing. Information on the Best Practices DVD and training requirements for ASL-English interpreting is available from MAVLI.

Educational interpreting consultants may offer a screening tool that evaluates the level of interpretation skills of potential and current school staff. These screenings can assist administrators in the hiring process and in completing school-based evaluations regarding interpretation skills.

For more information on accessing resources for signers and interpreters, see Appendix J: Hiring an ASL-English Interpreter and the Manitoba Education Deaf and Hard of Hearing Services Unit website at www.edu.gov.mb.ca/k12/specedu/dhh/.

Working with Interpreters: Information for the Classroom Teacher

The following information about working with interpreters is useful for the classroom teacher:

- The primary function of interpreters in Kindergarten to Grade 12 settings is to provide communication access for people who are Deaf and for hearing people who do not share a common language.

- Interpreters will interpret everything they can hear, including conversations, fire alarms, fights in the hall, sneezes, swearing, and any other audible sounds. Interpreters will also ensure that everything signed in a visible manner is also interpreted into English.

- Interpreters also interpret how things are said or signed (e.g., facial grammar conveys the tone of the message: pleased, disappointed, impatient).

- Interpreters will inform the student and teacher if information was misinterpreted or not interpreted.

- Interpreters are not participants in the interaction in the sense that they do not express their own opinions or delete information with which they do not agree.

- Interpreters either sit or stand at the front of the classroom, near the teacher and board so that the student has visual access to both at the same time. Discuss with interpreters where a good location might be, based on personal teaching style.

- Speak at a normal pace. If interpreters miss something or need to ask for clarification, they will ask the speaker.

- Speak to the student who is DHH directly in the first person and not "through" the interpreter in the third person. Interpreters will encourage direct communication among students, teachers, peers, and others.

- Interpreters need to be seen to be effective. Consider adequate lighting during films, concerts, and activities where the lights are typically turned off.

- Interpreters can more accurately convey your message if you prepare them well by providing them with information for class lessons, assemblies, concerts, field trips, et cetera, with as much notice as possible to allow for prep time. Textbooks, copies of class notes, copies of movies to preview, and so on, all help the student have access to the same curriculum as other students. It is helpful if interpreters are given time within their daily schedule for preparation.

- Interpreters need processing time and are a little behind what is being signed or spoken. Keep this in mind during group discussions. Have students speak one at a time, and ensure that the student who is DHH has the opportunity to answer questions and to participate fully in group discussions.

- On occasion, some students may need translation from written English to ASL. Please note that this may occur during tests or exams but should be worked out collaboratively prior to the testing period so that you are aware of what is happening.

- Interpreters will provide school staff and students with information regarding the role and responsibilities of the interpreter.

- Interpreters act as part of the school team. They will consult with the school team regarding student needs and IEP goals, accommodations, and environmental factors for interpreting. They will provide input regarding student communication needs and may participate on the IEP team.

- Interpreters should meet with support team members (i.e., educational interpreting consultant, ASL/education consultant, TDHH) on an as-needed basis.

- Interpreters are active in their professional organizations. They benefit from opportunities to participate in professional development directly related to their field.

- Most interpreters in the Kindergarten to Grade 12 setting work alone for the entire day. This places them at risk for work-related musculoskeletal injuries (MSI) such as carpal tunnel or repetitive use syndrome. Interpreters need sufficient breaks and rest time in order to avoid MSI.

Working with Interpreters: Information for the Student

The following information about working with interpreters is useful for the student:

- Participate in class and pay attention to the teacher through the interpreter.
- Work with the interpreter and the teacher on the best seating arrangements, keeping in mind visual communication needs.
- Interpreters will interpret in an appropriate manner for you, adapting the communication mode (e.g., ASL, oral support, speechreading) and language level as needed. Discuss any problems understanding the interpreter with the interpreter, and then with the teacher if necessary.
- Ask the interpreter for clarification of unfamiliar signs. Discuss with interpreter your language preferences and signing style (e.g., the number of finger-spelled abbreviations).
- Avoid conversation with the interpreter while they are interpreting information.
- Inform the interpreter if their clothing is visually distracting. If you are uncomfortable discussing this with the interpreter, talk to someone you trust about the situation in order to resolve it.
- Let interpreters know in advance when you are going to be away, if possible.
- You are responsible for ensuring that you understand instructions and homework assignments. The interpreter can help you to talk with teachers if you are uncertain about something.
- Interpreters are not teachers. If you do not understand something in class, it is best to ask the teacher.
- The interpreter will encourage you to be independent and to participate in all classroom activities.
- Interpreters interpret into English everything you say if it is signed in a visible manner. Private conversations that are not visible to the interpreter and others will not be voiced (i.e., interpreted into spoken English).

Roles and Responsibilities

The responsibilities of the interpreter and student shift throughout academic life. More responsibility for various non-interpreting duties is placed on the interpreter in earlier grades, while the expectation is

that the student will assume more independence as the academic years progress. The figure below illustrates this shift.

Figure 21 — **Interpreter-Student Responsibilities***

Interpreter Responsibility

Early Years

Middle Years

Senior Years

Student Responsibility
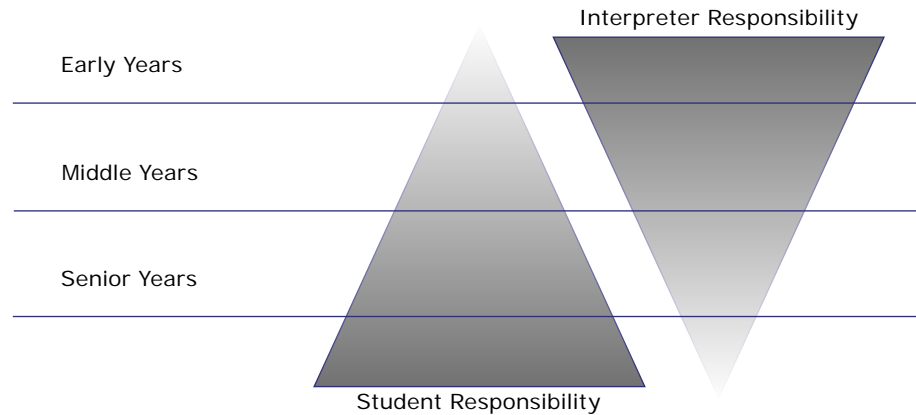
*Dennis Davino
Orange County Department of Education
Irvine, CA 1985

Young students or students transitioning to ASL as a primary communication code may be unfamiliar with how to use an interpreter. Students may need to be taught the roles of the adults in the classroom and given sufficient time to learn how to work with an interpreter. As the student progresses throughout the school year, the student should become more independent and self-reliant.

More non-interpreting roles, such as assisting students with dressing or keeping the student on task, will occur in the Early Years. In the Senior Years, interpreters typically spend the majority of their time interpreting, with tutoring as necessary.

Oral Interpreting

Oral interpreters are professionals who facilitate communication between hearing staff and students, and students who are DHH who use speechreading (lip-reading and facial expression) instead of ASL. Oral interpreters are rarely employed by school divisions.

Computerized Notetaking

Many students who are DHH are not able to hear and understand all oral communication and instruction in the classroom. If they do not use ASL, they may benefit from visual access to spoken communication through computerized notetaking (also known as graphic interpreting) support. The computerized notetaker (CN) uses a laptop to type a summary of the

information that is being spoken in a classroom and typically projects it on a screen for students to see. This information is saved, edited, and given to the student as class notes.

Computerized notetaking can be beneficial to all students in the class, particularly to those who have English as an additional language, those with attention difficulties, and those who are visual rather than auditory learners.

While notetaking services (e.g., TypewWell and C-Print) exist, most schools in Manitoba hire local staff to take on the CN role. The staff must have good typing and English skills.

Real-time captioning or CART (communication access real-time translation) is another service that provides visual information, in a format similar to that of a court reporter. The spoken language is relayed verbatim through a laptop using a phonetic encoding system. Due to the high cost for both the service and equipment, it is rarely used in a school setting, but it is sometimes used in a university setting.

Speech-to-text apps show promise as a possible avenue of providing notetaking for students. Currently the available apps are not sophisticated enough to provide 100 percent speech recognition, account for multiple speakers, and provide adequate formatting and saving of information. Thus, at this time, their effective use in the classroom is limited.

Students using a CN should have at least a Grade 4 reading level. The CN will match the level of the language to the student who is using the service.

Working with Computerized Notetakers: Information for the Classroom Teacher

The CN usually

- provides graphic notetaking for all school-related activities (including co-curricular activities, parent meetings, and any other occasions that may arise)
- paraphrases, summarizes, and modifies the language level of verbal information to meet student needs
- modifies and summarizes notes; adapts the layout of notes and the content of the subject to meet student needs
- edits the information, then emails or prints copies of the notes for students, as required
- prepares for graphic notetaking: becomes acquainted with subject-specific language and knowledge
- transports the equipment from class to class

The student who is DHH can access this information in any of the following ways:

- Sit anywhere in the room and read the information off of a projected image. The laptop is connected to a projector and information is projected onto a screen or a whiteboard for all to see. (This is the typical classroom set-up for notetaking.)
- Sit near the notetaker and read the information off the laptop monitor.
- Sit close to the notetaker and read the information off of an external LCD monitor that is connected to the laptop.

Ideas for Notetakers

The following approaches are effective:

- Label: Clearly label all sheets with the course name, date, and page numbers.
- Vocabulary: Use age-appropriate vocabulary and highlight new or difficult words to review later with the student.
- Handouts: Collect handouts and indicate that they are handouts and not part of the spoken lesson.
- Complete Sentences: Leave your notes in complete sentences so that students have the full picture when they refer to notes in the future.
- Classroom Chatter: Type all classroom communication even if it is off topic or inappropriate. If you hear it, the students who are DHH have a right to hear it too. Conversation not relevant to the class content can be edited out of the notes before they are sent to the student.
- Layout: Highlight key points and use indents, bullets, and numbers to visually enhance the meaning of the notes.
- Abbreviations: Use the auto-correct option on your word processing program to accept certain abbreviations to increase the speed of your notetaking (e.g., *USA* for United States of America; *ppl* for people).

Supports for Students Who Are DHH with Additional Needs

Surveys indicate that 35 to 50 percent of students who are DHH have an additional, educationally significant condition or disability (Marschark and Spencer 171.)

They may have a hearing loss plus one or more other challenges such as physical disabilities, autism, vision loss, learning disabilities, ADD/ADHD (attention deficit disorder/attention deficit hyperactivity disorder), FASD (fetal alcohol spectrum disorder), cognitive challenges, behavioural challenges, mental health issues, and/or neurological challenges.

Students with additional needs may require additional supports and adaptations in order to meet their needs, such as the following:

■ services from an OT, a PT, a consultant for the blind/visually impaired, a psychologist, a psychiatrist, a doctor, or a behaviour specialist

■ specialized materials (e.g., picture schedules, communication devices or picture communication systems, large print, special cushions, wheelchairs)

■ adapted, modified, or individualized lessons and assignments

■ specialized teaching strategies

■ environmental adaptations

■ procedural/scheduling adaptations (e.g., movement breaks, frequent changes in activity)

Physical and cognitive challenges may prevent students from being able to speak or to use sign language for communication. Some students may require a picture communication system (such as PCS) or voice output device. Other students may be able to use sign language, but due to physical limitations, have uncontrolled, choppy movements when signing (e.g., students with cerebral palsy). Whatever the student's challenges, it is critical that an effective communication system be established. The communication system may need to be re-evaluated over time to reflect changes in the student's needs and changes in technology.

When working with students who are DHH with additional needs, it is important that the child's primary needs are determined and emphasized. If the hearing loss is not the primary area of concern, the student may be best supported in programming to meet their main needs, with the use of strategies for the hearing loss as an additional support. Communication still remains an important focus.

Supports for Students Who Are Deafblind

An individual who is **deafblind** is one who has a combined vision and hearing loss, such that neither vision nor hearing can be used as a primary source of accessing information (Canadian Deafblind and Rubella Association). This is a functional definition, based on the combined effects of the losses rather than on a specific degree of loss to one or the other of the senses. The two sensory losses multiply and intensify the impact of one another, creating a severe disability.

A combined loss gives a person a distorted picture of the world and leads to immense difficulties in communication, mobility, learning, and interaction. All those with deafblindness experience sensory deprivation and are isolated from the world to varying degrees. Each person requires

a unique educational approach—a range of learning opportunities and a variety of teaching modalities (auditory, visual, kinesthetic, and tactual) in an accessible environment—in order to ensure that she or he has the opportunity to reach her/his full potential. The challenge for each individual is to make sense of the world using the limited information that can be accessed.

The educational plan, designed to meet the student's unique challenges and to reflect his or her skills, may include the following strategies:

- Conduct regular assessments to determine which teaching strategies are working.
- Emphasize development of communication skills.
- Provide initial training in basic self-help (e.g., dressing, feeding).
- Focus on exploration, orientation, and mobility.
- Develop connections with specific people.
- Include effective work habits and leisure skills in the plan as the student progresses.
- Provide learning opportunities for staff and classmates on the student's needs and build a community that is accepting and supportive.

Transitioning

Students who are DHH may face a number of challenges when they transition from school to school or from school to post-secondary education or work environments. They may encounter various levels of support and understanding of their needs depending on their new environment.

The Laurent Clerc National Deaf Education Center of Gallaudet University suggests transition skills guidelines for students from Kindergarten to Grade 12. The *Transition Skills Guidelines* focuses on five areas:

- advocacy and empowerment
- education and career planning
- work habits, skills, and attitudes
- independent living
- community roles, responsibilities, and resources

The *Transition Skills Guidelines* are used with the Laurent Clerc National Deaf Education Center's educational standards and benchmarks for the student's communication, thinking skills, life planning, and emotional intelligence. It is available online at the Laurent Clerc National Deaf Education Center website at http://clerccenter2.gallaudet.edu/products/?id=216.

The following is an excerpt:

STANDARD 1: Student demonstrates the skills necessary to advocate [for] and empower . . . him/herself.								
Topic	Grade K	Grades 1, 2, 3	Grades 4, 5	Grades 6, 7, 8	Grade 9	Grade 10	Grade 11	Grade 12
Self-Awareness	Identifies characteristics of self.	States positive traits and skills about self.	Identifies simple personal goals (academic, social, and career).	Identifies personal strengths and skills needed for family, school, and community success.	Links personal and academic skills to achieving personal, social, educational, and career goals.	Develops and implements a plan to strengthen skills needed for future goals.	Reflects on progress and updates plan to strengthen personal skills needed for future goals.	Implements and updates an always evolving post-secondary plan.

Manitoba Possible (formerly the Society for Manitobans with Disabilities) offers programs for recent immigrant/refugee families. Manitoba Possible can provide translation services for IEP, transition, and team meetings in as many as 18 different languages. Further information is available at www.manitobapossible.ca/newcomer-navigation-and-support-unit. Some school divisions also provide translation services and cultural liaison officers to support families.

Transitions for students with hearing loss may include the following:

- initial transition into school (e.g., entering Kindergarten)
- transfer to a new school (e.g., progress to junior/senior high school or move to a new area)
- transition from school to post-secondary education or the community

A team approach involving all partners in the transition process—families, service providers (e.g., preschool, daycare), support agencies, and the school system—ensures a student's successful transition into a new placement.

Suggestions for transitioning to a new placement include the following:

- Explore potential placement options as early as possible (e.g., in the spring for a September transition).
- Family, student, and team members make visits to potential placements to learn about their available supports and programming.
- Family and student, with support from the team, make a decision on the setting that would best meet the needs of the student.
- Family (or adult student) register at the new school.
- The sending school and the receiving school meet to discuss student strengths/needs and successful supports.
- The student visits the new placement in May or June preceding the change to become familiar with the new environment, personnel, and classmates, and therefore facilitate a smooth transition (depending on age and functioning level of student).
- For very young students, take pictures at the new setting and make a picture book of the new school/classroom/teacher that they can read over the summer to help them comprehend the transition and prepare themselves for the change.

■ Investigate transportation needs (e.g., Is busing needed? Is student transitioning from school bus to public transit?). Discuss and arrange bus training if needed.

Questions to ask at a transition meeting include the following:

■ Tell me about the student (e.g, strengths and challenges as a student who is DHH, other challenges).

■ How does the student communicate?

■ What supports/adaptations does this student require for communication, academics, and social skills?

■ What is the student's current academic level (especially reading and math)? Is a recent report card available?

■ Are there any medical issues?

■ Are there any behavioural or social-emotional concerns?

■ Does the student need any specialized/adapted equipment (e.g., hearing aids, CI, wireless audio system, computerized notetaking equipment)?

■ Are there any assessment/progress reports available (e.g., from the TDHH, the SLP, the AV therapist, the psychologist)?

Transitioning Students from Preschool to School

It is important to plan early for a child's transition into school. The planning typically occurs in the early spring prior to school entry and involves the preschool service providers and the school-based team, including the parents. This transition planning can assist the school in accessing the appropriate resources to support the educational programming.

Transitioning Students from High School to Post-Secondary Education

Students who plan to attend post-secondary educational institutions (e.g., university, college, apprenticeship programs) may require support to explore options and initiate applications.

Services for students who are DHH are available from the student accessibility services offices at a variety of post-secondary institutions. Students may also pursue study at schools specializing in education for students who are DHH, such as Gallaudet University, the National Technical Institute for the Deaf (NTID), and the California State University at Northridge.

The following resources provide information on transition planning and include an "Early Years Transition Planning Inventory" to facilitate information gathering and sharing:

■ *Protocol for Early Childhood Transition to School for Children with Additional Support Needs* available at www.gov. mb.ca/healthychild/ publications/ protocol_early_ childhood_transition. pdf

■ *Appropriate Educational Programming: A Handbook for Student Services* available at www.edu.gov.mb.ca/ k12/specedu/aep/ handbook_ss.full_ document.pdf

Students can receive assistance to help plan for post-secondary education from service coordinators at Manitoba Possible (e.g., planning supports, vocational rehabilitation funding).

Transitioning Students from High School to Community

As students enter the Senior Years, they begin to plan for their options in life after high school. Transition planning begins in the school year in which the student enters high school. The process concludes in June of the calendar year in which the student turns 21 or graduates. During this time, the support team and the student work together to provide the student with a coordinated transition from school to life in the community.

The support team assists the student in exploring and accessing community supports, agencies, and associations for individuals who are DHH. Manitoba Possible provides life skills training, job preparation, and work placement services. Assistance with resumé writing, interview skills, and exploring employment opportunities is available through Reaching E-quality Employment Services (REES). Staff at Manitoba Possible and REES have experience in working with individuals who are DHH and can communicate in American Sign Language as needed.

A P P E N D I C E S

Appendix A

Relationship of Hearing Loss to Listening and Learning Needs

16–25 dB HEARING LOSS		
Possible Impact on the Understanding of Language and Speech	**Possible Social Impact**	**Potential Educational Accommodations and Services**
■ Impact of a hearing loss that is approximately 20 dB can be compared to ability to hear when index fingers are placed in your ears. ■ Child may have difficulty hearing faint or distant speech. At 16 dB, student can miss up to 10% of speech signal when teacher is at a distance greater than 3 feet. ■ A 20 dB or greater hearing loss in the better ear can result in absent, inconsistent, or distorted parts of speech, especially word endings (s, ed) and unemphasized sounds. ■ Percent of speech signal missed will be greater whenever there is background noise in the classroom, especially in the elementary grades when instruction is primarily verbal and younger children have greater difficulty listening in noise. ■ Young children have the tendency to watch and copy the movements of other students rather than attending to auditorily fragmented teacher directions.	■ May be unaware of subtle conversational cues that could cause child to be viewed as inappropriate or awkward. ■ May miss portions of fast-paced peer interactions that could begin to have an impact on socialization and self-concept. ■ Behaviour may be confused for immaturity or inattention. ■ May be more fatigued due to extra effort needed for understanding speech.	■ Noise in typical classroom environments impede child from having full access to teacher instruction. Will benefit from improved acoustic treatment of classroom and soundfield amplification. ■ Favourable seating necessary. ■ May often have difficulty with sound/ letter associations and subtle auditory discrimination skills necessary for reading. ■ May need attention to vocabulary or speech, especially when there has been a long history of middle ear fluid. ■ Depending on loss configuration, may benefit from low power hearing aid with personal FM system. ■ Appropriate medical management necessary for conductive losses. ■ In-service on impact of "minimal" 15–25 dB hearing loss on language development, listening in noise, and learning is required for teacher.

26–40 dB HEARING LOSS		
Possible Impact on the Understanding of Language and Speech	**Possible Social Impact**	**Potential Educational Accommodations and Services**
■ Effect of a hearing loss of approximately 20 dB can be compared to ability to hear when index fingers are placed in ears, therefore a 26–40 dB hearing loss causes greater listening difficulties than a "plugged ear" loss. ■ Child can "hear" but misses fragments of speech leading to misunderstanding. ■ Degree of difficulty experienced in school will depend upon noise level in the classroom, distance from the teacher, and configuration of the hearing loss, even with hearing aids. At 30 dB, can miss 25–40% of the speech signal; at 40 dB, may miss 50% of class discussions, especially when voices are faint or speaker is not in line of vision. ■ Will miss unemphasized words and consonants, especially when a high frequency hearing loss is present. ■ Often experiences difficulty learning early reading skills such as letter/sound associations. ■ Child's ability to understand and succeed in the classroom will be substantially diminished by speaker distance and background noise, especially in the elementary grades.	■ Barriers begin to build with negative impact on self-esteem as child is accused of "hearing when he/she wants to," "daydreaming," or "not paying attention." ■ May believe he/she is less capable due to difficulties understanding in class. ■ Child begins to lose ability for selective listening and has increasing difficulty suppressing background noise causing the learning environment to be more stressful. ■ Child is more fatigued due to effort needed to listen.	■ Noise in typical class will impede child from full access to teacher instruction. ■ Will benefit from hearing aid(s) and use of a desktop or ear level FM system in the classroom. ■ Needs favourable acoustics, seating, and lighting. ■ May need attention to auditory skills, speech, language development, speech reading, and/or support in reading and self-esteem. ■ Amount of attention needed is typically related to the degree of success of intervention prior to 6 months of age to prevent language and early learning delays. ■ Teacher in-service on impact of so-called "mild" hearing loss on listening and learning is needed to convey that it is often greater than expected.

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41–55 dB HEARING LOSS

Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
■ Consistent use of amplification and language intervention prior to age 6 months increases the probability that the child's speech, language, and learning will develop at a normal rate. ■ Without amplification, understands conversation at a distance of 3–5 feet, if sentence structure and vocabulary are known. ■ The amount of speech signal missed can be 50% or more with 40 dB loss and 80% or more with 50 dB loss. ■ Without early amplification, the child is likely to have delayed or disordered syntax, limited vocabulary, imperfect speech production, and flat voice quality. ■ Addition of a visual communication system to supplement audition may be indicated, especially if language delays and/or additional disabilities are present. ■ Even with hearing aids, child can "hear" but may miss much of what is said if classroom is noisy or reverberant. ■ With personal hearing aids alone, ability to perceive speech and learn effectively in the classroom is at high risk. ■ A personal FM system to overcome classroom noise and distance is typically necessary.	■ Barriers build with negative impact on self-esteem as child is accused of "hearing when he/she wants to," "daydreaming," or "not paying attention." ■ Communication will be significantly compromised with this degree of hearing loss if hearing aids are not worn. ■ Socialization with peers can be difficult, especially in noisy settings such as cooperative learning situations, lunch, or recess. ■ May be more fatigued than classmates due to effort needed to listen.	■ Consistent use of amplification (hearing aids + FM) is essential. ■ Needs favourable classroom acoustics, seating, and lighting. ■ Consultation/program supervision by a specialist in childhood hearing impairment to coordinate services is important. ■ Depending on intervention success in preventing language delays, special academic support is necessary if language and academic delays are present. ■ Attention to growth of oral communication, reading, written language skills, auditory skill development, speech therapy, and self-esteem likely. ■ Teacher in-service is required with attention to communication access and peer acceptance.

56–70 dB HEARING LOSS

Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
■ Even with hearing aids, child will typically be aware of people talking around him/her, but will miss parts of words said resulting in difficulty in situations requiring verbal communication (both one-to-one and in groups). ■ Without amplification, conversation must be very loud to be understood; a 55 dB loss can cause a child to miss up to 100% of speech information without functioning amplification. ■ If hearing loss is not identified before age 1 year and appropriately managed, delayed spoken language, syntax, reduced speech intelligibility, and flat voice quality is likely. ■ Age when first amplified, consistency of hearing aid use, and success of early language intervention are strongly tied to speech, language, and learning development. ■ Addition of visual communication system is often indicated if language delays and/or additional disabilities are present. Use of a personal FM system will reduce the effects of noise and distance and allow increased auditory access to verbal instruction. With hearing aids alone, ability to understand in the classroom is greatly reduced by distance and noise.	■ If hearing loss was late-identified and language delay was not prevented, communication interaction with peers will be significantly affected. ■ Children will have greater difficulty socializing, especially in noisy settings such as lunch, cooperative learning situations, or recess. ■ Tendency for poorer self-concept and social immaturity may contribute to a sense of rejection; peer in-service is helpful.	■ Full-time consistent use of amplification (hearing aids + FM system) is essential. ■ May benefit from frequency transposition (frequency compression) hearing aids depending upon loss configuration. ■ May require intense support in development of auditory, language, speech, reading, and writing skills. ■ Consultation/supervision by a specialist in childhood hearing impairment to coordinate services is important. ■ Use of sign language or a visual communication system by children with substantial language delays or additional learning needs may be useful to access linguistically complex instruction. ■ Accommodations (notetaking, captioned films, etc.) are often needed. ■ Teacher in-service required.

71–90 dB and 91+ dB		
Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
■ The earlier the child wears amplification consistently with concentrated efforts by parents and caregivers to provide rich language opportunities throughout everyday activities and/or provision of intensive language intervention (sign or verbal), the greater the probability that speech, language, and learning will develop at a relatively normal rate. ■ Without amplification, children with 71–90 dB hearing loss may only hear loud noises about 1 foot from ear. ■ When amplified optimally, children with hearing ability of 90 dB or better should detect many sounds of speech if presented from close distance or via FM. ■ Individual ability and intensive intervention prior to 6 months of age will determine the degree that sounds detected will be discriminated and understood by the brain into meaningful input. ■ Even with hearing aids, children with 71–90 dB loss are typically unable to perceive all high-pitch speech sounds sufficiently to discriminate them or benefit from incidental listening, especially without the use of FM. ■ The child with hearing loss greater than 70 dB may be a candidate for cochlear implant(s) and the child with hearing loss greater than 90 dB will not be able to perceive most speech sounds with traditional hearing aids. ■ For full access to language to be available visually through sign language or cued speech, family members must be involved in child's communication mode from a very young age.	■ Depending on success of intervention in infancy to address language development, the child's communication may be minimally or significantly affected. ■ Socialization with hearing peers may be difficult. ■ Children in general education classrooms may develop greater dependence on adults due to difficulty perceiving or comprehending oral communication. ■ Children may be more comfortable interacting with peers who are Deaf and/or hard of hearing due to ease of communication. ■ Relationships with peers and adults who have hearing loss can make positive contributions toward the development of a healthy self-concept and a sense of cultural identity.	■ There is no one communication system that is right for all children who are hard of hearing and/or Deaf and their families. ■ Whether a visual communication approach or auditory/oral approach is used, extensive language intervention, full-time consistent amplification use, and constant integration of the communication practices into the family by 6 months of age will highly increase the probability that the child will become a successful learner. ■ Children with late-identified hearing loss (i.e., after 6 months of age) will have delayed language. ■ This language gap is difficult to overcome, and the educational programming of a child with hearing loss, especially those with language and learning delays secondary to hearing loss, requires the involvement of a consultant or teacher with expertise in teaching children with hearing loss. ■ Depending on the configuration of the hearing loss and individual speech perception ability, frequency transposition (frequency compression) aids or cochlear implantation may be options for better access to speech. ■ If an auditory/oral approach is used, early training is needed on auditory skills, spoken language, concept development, and speech. ■ If culturally Deaf emphasis is selected, frequent exposure to Deaf ASL users is important. ■ Educational placement with other signing Deaf and/or hard of hearing students (special school or classes) may be a more appropriate option to access a language-rich environment and free-flowing communication. ■ Support services and continual appraisal of access to communication and verbal instruction is required. ■ Notetaking, captioning, captioned films, and other visual enhancement strategies are necessary. Training in pragmatic language use and communication repair strategies is helpful. ■ In-service of general education teachers is essential.

UNILATERAL HEARING LOSS

Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
■ Child can "hear" but can have difficulty understanding in certain situations, such as hearing faint or distant speech, especially if poor ear is aimed toward the person speaking. ■ Will typically have difficulty localizing sounds and voices using hearing alone. ■ The unilateral listener will have greater difficulty understanding speech when environment is noisy and/or reverberant, especially when normal ear is toward the overhead projector or other competing sound source and poor hearing ear toward the teacher. ■ Exhibits difficulty detecting or understanding soft speech from the side of the poor hearing ear, especially in a group discussion.	■ Child may be accused of selective hearing due to discrepancies in speech understanding in quiet versus noise. ■ Social problems may arise as child experiences difficulty understanding in noisy cooperative learning or recess situations. ■ May misconstrue peer conversations and feel rejected or ridiculed. ■ Child may be more fatigued in classroom due to greater effort needed to listen if class is noisy or has poor acoustics. ■ May appear inattentive, distractible, or frustrated, with behaviour or social problems sometimes evident.	■ Allow child to change seat locations to direct the normal hearing ear toward the primary speaker. ■ Student is at 10 times the risk for educational difficulties as children with 2 normal hearing ears, and 1/3 to 1/2 of students with unilateral hearing loss experience significant learning problems. ■ Children often have difficulty learning sound/letter associations in typically noisy Kindergarten and Grade 1 settings. ■ Educational and audiological monitoring is warranted. ■ Teacher in-service is beneficial. ■ Typically will benefit from a personal FM system with low gain/power or a soundfield FM system in the classroom, especially in the lower grades. ■ Depending on the hearing loss, may benefit from a hearing aid in the impaired ear.

MID-FREQUENCY HEARING LOSS or REVERSE SLOPE HEARING LOSS

Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
■ Child can "hear" whenever speech is present but will have difficulty understanding in certain situations. ■ May have difficulty understanding faint or distant speech, such as a student with a quiet voice speaking from across the classroom. ■ The "cookie bite" or reverse slope listener will have greater difficulty understanding speech when environment is noisy and/ or reverberant, such as a typical classroom setting. ■ A 25–40 dB degree of loss in the low to mid-frequency range may cause the child to miss approximately 30% of speech information if unamplified; some consonant and vowel sounds may be heard inconsistently, especially when background noise is present. ■ Speech production of these sounds may be affected.	■ Child may be accused of selective hearing or "hearing when he wants to" due to discrepancies in speech understanding in quiet versus noise. ■ Social problems may arise as child experiences difficulty understanding in noisy cooperative learning situations, lunch, or recess. ■ May misconstrue peer conversations, believing that other children are talking about him or her. ■ Child may be more fatigued in classroom setting due to greater effort needed to listen. ■ May appear inattentive, distractible, or frustrated.	■ Personal hearing aids important but must be precisely fit to hearing loss. ■ Child likely to benefit from a soundfield FM system, a personal FM system, or an assistive listening device in the classroom. ■ Student is at risk for educational difficulties. ■ Can experience some difficulty learning sound/letter associations in Kindergarten and Grade 1 classes. ■ Depending upon degree and configuration of loss, child may experience delayed language development and articulation problems. ■ Educational monitoring and teacher in-service is warranted. ■ Annual hearing evaluation to monitor for hearing loss progression is important.

HIGH FREQUENCY HEARING LOSS

Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
■ Child can "hear" but can miss important fragments of speech. ■ Even a 26–40 dB loss in high frequency hearing may cause the child to miss 20–30% of vital speech information if unamplified. ■ Consonant sounds /t/, /s/, /f/, /th/, /k/, /sh/, and /ch/ likely heard inconsistently, especially in noise. ■ May have difficulty understanding faint or distant speech, such as a student with a quiet voice speaking from across the classroom; will have much greater difficulty understanding speech when in low background noise and/or when reverberation is present. ■ Many of the critical sounds for understanding speech are high pitched, quiet sounds, making them difficult to perceive; the words cat, cap, calf, and cast could be perceived as "ca"; word endings, possessives, plurals, and unstressed brief words are difficult to perceive and understand. ■ Speech production may be affected. ■ Use of amplification is often indicated to learn language at a typical rate and ease learning.	■ May be accused of selective hearing due to discrepancies in speech understanding in quiet versus noise. ■ Social problems may arise as child experiences difficulty understanding in noisy cooperative learning situations, lunch, or recess. ■ May misinterpret peer conversations. ■ Child may be fatigued in classroom due to greater listening effort. ■ May appear inattentive, distractible, or frustrated. ■ Could affect self-concept.	■ Student is at risk for educational difficulties. ■ Depending upon onset, degree, and configuration of loss, child may experience delayed language and syntax development and articulation problems. ■ Possible difficulty learning some sound/letter associations in Kindergarten and Grade 1 classes. ■ Early evaluation of speech and language skills is suggested. ■ Educational monitoring and teacher in-service are warranted. ■ Will typically benefit from personal hearing aids and use of a soundfield or a personal FM system in the classroom. ■ Use of ear protection in noisy situations is imperative to prevent damage to inner ear structures and resulting progression of the hearing loss.

FLUCTUATING HEARING LOSS

Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
■ Of greatest concern are children who have experienced hearing fluctuations over many months in early childhood (multiple episodes with fluid lasting three months or longer). ■ Listening with a hearing loss that is approximately 20 dB can be compared to hearing when index fingers are placed in ears. ■ This loss or worse is typical of listening with fluid or infection behind the eardrums. ■ Child can "hear" but misses fragments of what is said. Degree of difficulty experienced in school will depend upon the classroom noise level, the distance from the teacher, and the current degree of hearing loss. ■ At 30 dB, can miss 25–40% of the speech signal; child with a 40 dB loss associated with "glue ear" may miss 50% of class discussions, especially when voices are faint or speaker is not in line of vision. ■ Child will frequently miss unstressed words, consonants, and word endings.	■ Barriers begin to build with negative impact on self-esteem as the child is accused of "hearing when he/she wants to," "daydreaming," or "not paying attention." ■ Child may believe he/she is less capable due to understanding difficulties in class. ■ Typically poor at identifying changes in own hearing ability. With inconsistent hearing, the child learns to "tune out" the speech signal. ■ Children are judged to have greater attention problems, insecurity, and distractibility and to lack self-esteem. ■ Tend to be non-participative and distract themselves from classroom tasks; often socially immature.	■ Impact is primarily on acquisition of early reading skills and attending in class. ■ Screening for language delays is suggested from a young age. ■ Ongoing monitoring for hearing loss in school, communication between parent and teacher about listening difficulties, and aggressive medical management are needed. ■ Will benefit from soundfield FM or an assistive listening device in class. ■ May need attention to development of speech, reading, self-esteem, or listening skills. ■ Teacher in-service is beneficial.

Appendix B
An Illustration of Hearing Loss

The following demonstrates difficulties a student may have if the higher frequency parts of words are inaudible due to hearing loss and/or poor acoustics.

Figure 22	**Missing Bits and Pieces of Words**

Won upon a time

a itty mow when to vit a untry mow.

The untry mow live in a feel.

EEE wuz lad to shee hi zittyfren.

A too my ran abowda feel and lay unt noon.

Translation:

Once upon a time
a city mouse went to visit a country mouse.
The country mouse lived in a field.
He was glad to see his city friend.
The two mice ran about the field and played until noon.

Appendix C
FM Wireless Audio Systems

There's an FM System in My Classroom

What is an FM system and why is it used?

- The FM system is a special device that uses radio signals to send a sound from a microphone used by one sound source, across distance to a listener using a receiver that is either connected to their hearing aids or to some type of headphones/earphones.
- This device is helpful in reducing the negative effects of background noise, loss of loudness, and lack of clarity over distance and reverberation.
- It is being used to help students in your class hear so that they can learn—remember that if students cannot hear you clearly, they cannot learn.
- You should be able to find more information about the FM system and why it is required for the student(s) in your classroom in the package of support materials and report that has been sent to your school. If you have not seen this information, then please contact the resource teacher and/or the audiologist.

Do I still need to use the FM system if I have a loud voice?

- Regardless of the loudness of your voice, as you move around, the distance changes between you and the student and thus your voice will change/fluctuate in loudness and clarity with the changing distance if you are not using an FM system.
- The loudness of your voice changes for the listener depending on whether you are facing them or not.
- Constantly changing loudness is very hard for a person with a hearing loss, and hearing aids are not able to keep the loudness of your voice constant or always at a level that is comfortable or even audible.
- The FM system microphone remains a constant distance from your mouth and therefore it maintains the loudness of your voice at a fairly constant level for the hearing aids, thus maintaining your voice at a constant and comfortable loudness for the student with a hearing loss.

What do I need to know about microphones?

- Most microphones (lapel mics and mics integrated into a transmitter) need to be positioned within 6 to 8 inches of your mouth (see the specific instructions provided with your system).
- Boom microphones usually provide better and more consistent sound quality than microphones clipped on your shirt or worn hanging around your neck because they move with your head and stay close to your mouth.
- The microphone will pick up your voice and any other sounds near it, so if your microphone is swinging and banging on something or rubbing on your clothing it will make a lot of distracting and irritating noise.

- Microphones are delicate and if dropped on a hard surface, they usually break.

- If there is wind blowing over the microphone it will usually be heard as "loud static."

- It is important to keep the cord between the microphone and the unit in good shape and to be sure that it is not tangled or knotted.

- Many FM systems have the antenna for the transmitter integrated into either the mic cord or the lavaliere neck cord.

- There are different styles of microphones for different units.

- Sometimes the particular needs of the child will dictate which microphone needs to be used, but sometimes there are choices, so if you would prefer to try a different style, please contact the audiologist to discuss what options are available for the particular unit that you have and for the best performance of the student.

What should I do if there is a problem with the FM system?

- First, you should perform a basic check of the system (time for some logical deduction).
  - Be sure that both the FM transmitter and the receiver are turned on.
  - Be sure that the FM microphone is attached (if it is separate) and turned on if it has a switch (not in mute position).
  - Check that the hearing aids are turned on.
  - Change the hearing aid batteries—they may be too weak to run the aid and FM system.
  - Check to see that the FM direct audio-input boots are correctly attached to the hearing aids and that the contact points are clean and in good condition.
  - Check that the earmold of the hearing aid is not blocked with wax and that there is no condensation/water droplets in the earmold tubing.
  - See the troubleshooting guide in the instructions for the FM system.

- If the system still does not work, put it back on to charge and be sure that you can see the charge lights to indicate that the charger is working.

- Next, you may want to contact your resource teacher or educational assistant to help run through a full troubleshooting step-by-step check of the system. (Troubleshooting instructions can be found in the FM system manual that has been provided with the unit or on the website of the system's manufacturer.)

- If you cannot find the problem or need assistance, please contact the audiologist for telephone assistance. The person making the call needs to be able to describe the problem and what has been tried and needs to be familiar with the FM system—often the problem can be solved without returning the FM system.

- If any of the spare parts are used/broken, you need to let the audiologist know immediately so that new spare parts can be ordered (parts can sometimes take several weeks to arrive).

- Please note, a statement of "not working" does not help—the more details that you can provide, the easier it is for the audiologist to understand the problem that you are encountering and find the problem and a solution.
  - What is not working?
  - What have you tried?
  - When did the problem start?
  - When does it not work? (always/late in the day/etc.)
  - Where does the problem occur? (everywhere or only in some locations)
  - Has anything happened to any part of the FM system—was something dropped?

Website resource:

Many FM equipment manufacturers now have websites with helpful training and troubleshooting information specific to many of their FMs. If you search via the manufacturer you will likely be able to locate resources for schools and teachers and FM users.

Please use the FM System consistently and familiarize yourself with it – your student deserves to hear what you are saying.

Appendix D

Phonological Skills

Phonological skill develops in a predictable progression and provides the basis for sequencing teaching tasks from easy to more difficult.

Prerequisites for phonological awareness are basic listening skill; the acquisition of a several-thousand-word vocabulary; the ability to imitate and produce basic sentence structures; and the use of language to express needs, react to others, comment on experience, and understand what others intend.

Phonological skills, from most basic to advanced, and the ages at which 80 to 90 percent of students have achieved each are outlined in the chart below.

Age	Skill Domain	Sample Task
4	Rote imitation and enjoyment of rhyme and alliteration	**pool, drool, tool** "Seven silly snakes sang songs seriously."
5	Rhyme recognition, odd word out	Which two words rhyme? **stair, steel, chair**
	Recognition of phonemic changes in word	"*Hickory Dickory Clock*. That's not right!"
	Clapping, counting syllables	**truck** (1 syllable) **airplane** (2 syllables) **boat** (1 syllable) **automobile** (4 syllables)
5.5	Distinguishing and remembering separate phonemes in a series	Show sequences of single phonemes with coloured blocks: /s/ /s/ /f/; /z/ /sh/ /z/.
	Blending onset and rime	"What word?" **th-umb** **qu-een** **h-ope**
	Producing a rhyme	Tell me a word that rhymes with *car*. (**star**)
	Matching initial sounds; isolating an initial sound	Say the first sound in *ride* (/r/); *sock* (/s/); *love* (/l/).
6	Compound word deletion	Say *cowboy*. Say it again, but don't say *cow*. (**boy**)
	Syllable deletion	Say *parsnip*. Say it again, but don't say *par*. (**snip**)
	Blending of two and three phonemes	/z/ /ū/ (**zoo**) /sh/ /ŏ/ /p/ (**shop**) /h/ /ou/ /s/ (**house**)
	Phoneme segmentation of words that have simple syllables with two or three phonemes (no blends)	Say the word as you move a chip for each sound. sh-e m-a-n l-e-g
6.5	Phoneme segmentation of words that have up to three or four phonemes (include blends)	Say the word slowly while you tap the sounds. b-a-ck ch-ee-se c-l-ou-d
	Phoneme substitution to build new words that have simple syllables (no blends)	Change the /j/ in *cage* to /n/. Change the /ā/ in *cane* to /ō/.
7	Sound deletion (initial and final positions)	Say *meat*. Say it again, without the /m/. Say *safe*. Say it again, without the /f/.

Age	Skill Domain	Sample Task
8	Sound deletion (initial position, include blends)	Say *prank*. Say it again, without the /p/.
9	Sound deletion (medial and final blend positions)	Say *snail*. Say it again, without the /n/. Say *fork*. Say it again, without the /k/.

Source: Moats, Louisa, and Carol Tolman. Excerpt from *Language Essentials for Teachers of Reading and Spelling (LETRS): The Speech Sounds of English: Phonetics, Phonology, and Phoneme Awareness* (Module 2), 2nd ed., Voyager Sopris Learning, 2009. Adapted with permission.

Appendix E
Question Hierarchy

Question Hierarchy

Level I	Level II	Level III	Level IV
Find one like this.	Find one that can _____.	Find one to use with this.	Where will _____?
Show me what you heard.	What is happening?	What will happen next?	What will happen if _____?
Show me what you touched.	What things _____?	What could he say (sign)?	Why will _____?
What did you hear?	Who? What? Where?	Do this, then this.	Why wouldn't it _____?
What did you touch?	Finish this _____.	Make these into _____.	Why would it _____?
What is this?	Tell me its _____.	Tell me how.	What made it happen?
Say (Sign) this: _____	Find the one that is _____ and _____.	What (same thing) happened to all of these?	What could you do?
What did you see?	How are these **different**?	Tell this story.	What could she do?
Show me what you saw.	Name something that is a _____.	How are these the **same**?	What could we use to _____?
		What else can you think of that _____?	Why should we use that?
		Find the things that are **not** _____.	Why is _____made of that?
		Name something that can, but is **not** a _____.	How can we tell _____?
		Name something that is **not** a _____.	Why is this called _____?
		What is a _____?	Why can't we_____?
		Say this: _____.	

Reference: Blank, Marion, Susan A. Rose, and Laura J. Berlin. *The Language of Learning: The Preschool Years*. Grune & Stratton-HBJ, 1978.

Question Hierarchy

Level I: Matching Perception (less perceptual/language distance)*

Reporting and responding to salient information.

Examples:

- What is this?
- What things do you see on the table?
- I'd like to have one.
- Please give me the _____.

Level II: Selective Analysis of Perception

Reporting and responding to delineated and less salient cues.

Examples:

- Now we'll need a bowl to mix these things together.
- What shape is the bowl?
- Oh, look how they are spreading out!
- Let's think of some other things that we can bake in the oven.

Level III: Reordering Perception

Using language to restructure perceptual input and inhibit predisposing responses.

Examples:

- Tell me what we put in the bowl before we added the egg.
- Show me the part of the egg that we don't eat.

Level IV: Reasoning about Perception (most perceptual/language distance)

Using language to predict, reflect on, and integrate ideas and relationships.

Examples:

- Why don't we eat that part?
- What will happen to the cookies when we put them in the oven?
- We'll need to use a pot holder because otherwise we'll burn our hands.

*Perceptual=material available to child; Language=verbal/signed formulations of teacher.

Appendix F
Revised Bloom's Taxonomy

Bloom's Taxonomy was created by Benjamin Bloom and others in the 1950s to show different types of learning, and it has since been used as a course planning tool. In 2000, Lorin Anderson and David Krathwol revised it, reversing the order of the two highest cognitive processes, and adding *metacognitive* to the knowledge dimensions.

Knowledge Dimensions

The following types of knowledge intersect with the cognitive processes in the revised taxonomy:

- **Factual** knowledge refers to what one must know to understand a topic area and to solve problems in that area.
- **Conceptual** knowledge is knowing the interrelationships among elements within a larger structure and how they work together.
- **Procedural** knowledge is knowing how to do, discover, or inquire about something—how to use skills and methods.
- **Metacognitive** knowledge is knowledge and understanding of one's own thinking and thinking in general.

Cognitive Processes

The following table presents the six levels of cognitive processes of the revised taxonomy, together with associated verbs, question starters, and examples of how to demonstrate learning at this level.

Revised Bloom's Taxonomy

Cognitive Process	Verbs	Question Prompts/Starters	Examples of Demonstrated Learning
Remembering Recognizing or recalling knowledge, ideas, or information from memory.	arrange, bookmark, copy, define, describe, detail, draw, duplicate, find, highlight, identify, indicate, inventory, label, list, locate, match, memorize, name, outline, pick, point, pronounce, quote, recall, recite, recognize, record, relate, repeat, reproduce, restate, retrieve, search, select, state, underline	■ What do you remember about _____? ■ How would you define _____? ■ How would you identify _____? ■ How would you recognize _____? ■ What would you choose _____? ■ Describe what happens when _____. ■ How is/are _____? ■ Where is/are _____? ■ Which one _____? ■ Who was _____? ■ Why did _____? ■ What is/are _____? ■ When did _____? ■ How would you outline _____? ■ List the _____ in order.	■ Label the parts of the brain. ■ Outline the steps in the scientific method. ■ List the steps taken to make a cake. ■ Recite a club's motto.
Understanding Constructing meaning from different types of messages.	annotate, clarify, classify, comment, compare, confirm, contrast, convert, categorize, decipher, defend, designate, differentiate, equate, estimate, express, extend, extrapolate, generalize, give examples, group, illustrate, infer, interpret, liken, order, paraphrase, predict, reorder, rephrase, rewrite, sort, specify, substitute, summarize, tell, translate	■ How would you compare _____? contrast _____? ■ How would you clarify the meaning _____? ■ How would you differentiate between _____? ■ How would you generalize _____? ■ How would you express _____? ■ What can you infer from _____? ■ What did you observe _____? ■ Elaborate on _____. ■ What would happen if _____? ■ What is the main idea of _____? ■ What can you say about _____?	■ Defend a position about representational government. ■ Give an example of an adverb. ■ Specify the role of the chairperson in a working group.

Cognitive Process	Verbs	Question Prompts/Starters	Examples of Demonstrated Learning
Applying Using knowledge or skills in new situations, to solve problems, answer questions, or perform other tasks.	act out, add, allocate, alter, apply, calculate, change, choose, complete, compute, conduct, coordinate, demonstrate, determine, direct, discover, divide, dramatize, draw, employ, execute, formulate, gather, graph, make, manipulate, model, multiply, operate, organize, perform, present, provide, recount, report, schedule, show, sketch, subtract, use, utilize	■ What actions would you take to perform _____? ■ How would you develop _____ to present _____? ■ What other way could you choose to _____? ■ What would be the result if _____? ■ How would you demonstrate _____? ■ How would you present _____? ■ How would you change/modify _____? ■ How could you develop _____? ■ Why does _____ work? ■ How would you alter _____ to _____? ■ What examples can you find that _____? ■ How would you solve _____?	■ Demonstrate the proper technique for performing a Ling 6 sound test. ■ Graph the results of a survey. ■ Modify a procedure for someone with a disability.
Analyzing Breaking knowledge down into parts, and showing and explaining the relationships among the parts.	analyze, appraise, associate, attribute, bread down, categorize, classify, correlate, criticize, deconstruct, deduce, discern, diagram, discriminate, dissect, distinguish, elect, establish, experiment, explain, expound, illustrate, inspect, investigate, mind-map, mash, profile, question, refute, scrutinize, separate, simplify, subdivide, summarize, test	■ How can you classify _____ according to _____? ■ How can you compare the different parts _____? ■ What explanation do you have for _____? ■ How is _____ connected to _____? ■ Discuss the pros and cons of _____. ■ What can you deduce from _____? ■ What ideas validate _____? ■ What can you point out about _____? ■ What is the problem with _____? ■ Why do you think _____?	■ Explain the implications of a change in schedule. ■ Determine the needs of classmates when organizing an activity. ■ Distinguish between ethical and unethical behaviour.

Cognitive Process	Verbs	Question Prompts/ Starters	Examples of Demonstrated Learning
Evaluating Judging or assessing the value of ideas, materials, and methods for a given purpose.	argue, assess, attack, champion, compare and contrast, conclude, critique, debate, decide, deduce, defend, diagnose, editorialize, evaluate, forecast, grade, improve, judge, justify, measure, prescribe, prioritize, prove, rank, rate, recommend, resolve, review, revise, score, select, solve, support, validate, value, verify, weigh	■ What criteria would you use to assess ____? ■ What data was used to evaluate ____? ■ What choice would you have made regarding ____? ■ What is the most important ____? ■ What would you suggest ____? ■ How would you grade ____? ■ What is your opinion of ____? ■ How could you verify ____? ■ What information would you use to prioritize ____? ■ Rank the importance of ____. ■ Determine the value of ____.	■ Support the value of diversity in a project team. ■ Recommend a course of action. ■ Rank the value of various expenditures.
Creating Pulling together parts of knowledge to form a new whole and build relationships for new situations.	animate, assemble, assimilate, build, collect, compose, condense, construct, create, curate, derive, design, develop, devise, elaborate, expand, formulate, generate, guide, hypothesize, integrate, invent, manage, mix, modify, originate, organize, plan, prepare, produce, program, propose, rearrange, reconstruct, reorganize, revise, rework, set up, simulate, synthesize, theorize, transform, write	■ What alternative would you suggest for ____? ■ What changes would you make to revise ____? ■ How would you explain the reason ____? ■ How would you generate a plan to ____? ■ What could you invent to ____? ■ What facts can you gather ____? ■ How would you portray ____? ■ Devise a way to ____. ■ Elaborate on the reason ____. ■ How would you improve ____? ■ Generate ideas for ____.	■ Devise a plan to help food-insecure members of your community. ■ Design a blueprint for an ideal laboratory. ■ Write a short story or poem. ■ Build a website.

Appendix G
Problem-Solving Framework

Identify the problem: _____

Develop possible solutions (brainstorming component):

1. _____

2. _____

3. _____

Identify the pros and cons of each solution. Pick one solution and try it.

Did it work?

_____ Yes? Good! You chose an effective solution.

_____ No? Can you determine why it didn't work? Pick another solution to try, knowing what didn't work the first time.

Appendix H

Literacy Strategies for Students Who Are Deaf or Hard of Hearing

Top Five Strategies under Each Area	Specific Examples
Vocabulary	
Word Play	Sentence completion activities (cloze); glossary lists; multiple meanings; synonyms; antonyms; root words; analogies; metaphors; build categories; use of dictionary/reference books; matching; lots of practice and usage of new words; use of adjectives and adverbs (descriptive writing); thesaurus; highlight/bold new words/phrases; words in context; vocabulary notebook
Pre-teaching	Discuss vocabulary before, during, and after reading; direct teaching; relate to things students already know (prior knowledge); rehearsal of words in a variety of sentences; review; focus on commonly used words for a topic covered in class or of interest to the student
Games	Balderdash-style games; Bananagrams; Scrabble; Apples to Apples; direction activities using vocabulary; flashcards; word family bingo
Graphic Organizers	Word maps; brainstorm and web vocabulary; semantic/concept maps; comparing and contrasting/Venn diagram
Visuals/Pictures	Vocabulary redefined in the students' own words with picture or symbol for greater retention; exemplars; facial grammar in ASL and what it means in English
Conversation Skills	
Role-Playing	Informal conversation; repair strategies; context of a good communicator; turn taking; active listening
Modelling	Direct instruction techniques; cueing to the topic; reflecting on the statement of the speaker; social stories; asking and answering questions with a pragmatic checklist; videotape conversation with peers
Questioning and Conversation Techniques	Watch videos and discuss; KWL; students must use three question words to continue the conversation; photo to keep a conversation going/to ask questions/to learn a particular piece of information; conversation groups; video pal messages
Games	Barrier games; News Time; manipulatives
Flashcards	Super Duper fun decks; using new vocabulary in sentences; situational cards with speech bubbles; social skills cards; wh-question cards; picture cards to prompt topics of conversation
Alphabetic Principle	
Text Strategies	Repeated/daily reading at school and home; direct instruction; target sounds and practice through reading; guided reading; paper/pencil tasks; picture books
Phonemic Awareness Activities	Letter-word associations; alphabet jingles; phonics worksheets; initial/medial/final sounds; practise LING-6 sounds; AV techniques; practise sound-letter correspondence; flashcards; vowel/consonant recognition
Letter Play	Manipulation of letters within words; syllables; root words; alphabetize; spelling real and nonsense words; Scrabble/magnetic tiles to invent words and focus on sounds; alphabet books; matching phonemes to print symbols; flashcards
Word Families	Dolch list matching; Scrabble tiles with word families; build crossword puzzles; flashcards
Rhyming	Songs/music; games; matching; flashcards; hands-on activities
Fluency	
Text Strategies	Reading aloud/through the air; reading and answering comprehension questions; book club conversation; reader's theatre; sight words; choral reading; tracking text while reading; view finder strategy; focus on punctuation during reading; add facial expression to indicate question/statement
Phonological Awareness Activities	Modelling; audio/video record students reading and have them critique themselves; role play; decoding multisyllabic words; prefixes/suffixes; consonant/vowel patterns; relate word families; rhyming words; word attack skills

Top Five Strategies under Each Area	Specific Examples
Repetitive Reading	Highlight words not decoded accurately and go back and discuss in context; timed reading; guided reading
Pre-teaching Vocabulary	Word lists from the text; transfer word lists to flashcards for review
Chunking of Phrases	Scan/skim; practise fluency of phrases
Comprehension	
Questioning Techniques	Five Wh ?s; generate questions by looking at pictures in text; visualizing framework of the five Wh ?s as they read; re-reading; take turns reading passage with listener asking two Wh ?s; SQ4R (survey/question/read/recite/revise/reflect); comprehension questions for reference while reading; question wheel; establish connections to personal experiences; text-to-self/text-to-text/text-to-world—Making Connections; OWL strategy (Observe or notice/What do you wonder/Link to your life)
Prediction	Cause and effect; visualizing exercises; looking at headings; compare/contrast; pre-reading predictions of characters/problem/setting, etc.
Main Ideas	Graphic organizers; explicit instruction; highlight text for evidence/author's purpose for passage; clarification
Summarizing	Sequencing charts; games; cloze activities; journal writing; role play; opinions of passage; context clues; re-telling; use pictures for clues; paper/pencil tasks
Pre-teaching	Pre-reading strategies; relate information to prior knowledge; highlight key words; pre-teach unknown vocabulary; flashcards
Writing	
Journal Writing	Picture prompts; list of vocabulary that can be used for a writing task so that word retrieval does not stall creativity; dialogue journals; email older students daily, same format as a dialogue journal
Visual Strategies	Graphic organizers to compare/contrast; draw pictures with text; look at photos to generate text; words on paper strips/tiles/blocks to play with word order; webs; visual of sandwich/hamburger for a sentence; story maps
Modelling	Brainstorming; model questions and answers; correct the morning message; writing centre; write notes to the office/classroom door/parents, etc.; audition with visual support to model
Writing for Variety of Purposes	Sequence stories; create books about themselves; story structure; difference between fictional and informational writing; taking turns writing sentences for an imaginative story; writing in form of interest for them (e.g., comics); home news book
Editing Techniques	Editing writing samples together; re-reading aloud to hear mistakes; thesaurus; focus on two to three grammatical features for editing; editing checklist/rubric; review their writing/revise/self-editing; transition word list; one-to-one conferencing; student identify missing parts of speech or grammar for correction

Appendix I

Reading

Reading = Decoding **and** Comprehending

Can You Read?

dactylion

1. Can you speak/sign this word?

2. Can you comprehend this word?
   Show me your understanding by
   a. using the word in a sentence
   b. drawing a picture
   c. acting the word out
   d. bringing one to me

If you do only 1, you are *only decoding.*
If you can do 2, you *are comprehending.*

If a student *only decodes* text out loud, you only know half the picture.

Checking for understanding about what the student decoded will give you the entire picture.

Appendix J
Hiring an ASL-English Interpreter

Interviewing and Screening Interpreters

The Manitoba Education Consultant Outreach Team, in collaboration with the school-based team and the TDHH, can assist school divisions in hiring signers and interpreters by offering a screening tool that evaluates the level of interpretation skills. These screenings can also assist administrators in completing school-based evaluations regarding interpretation skills.

The department is aware that it can be difficult to recruit interpreters for Manitoba schools, particularly in rural and isolated parts of the province. Screening assists in choosing the best option in difficult situations.

For more information, please visit the Manitoba Deaf and Hard of Hearing Services Unit website at www.edu.gov.mb.ca/k12/specedu/dhh/index.html.

Qualifications of Interpreters

Qualifications of ASL-English interpreters include the following:

- graduation from an ASL-English Interpreting Program (AEIP)
- active dual membership in the Manitoba Association of Visual Language Interpreters (MAVLI) and the Association of Visual Language Interpreters of Canada (AVLIC)
- experience working with students who are Deaf or hard of hearing
- basic understanding of hearing loss and its effect on the social, physical, and psychological development of individuals who are Deaf or hard of hearing
- basic knowledge of language acquisition and development
- an awareness of Deaf culture specifically and cultural diversity generally, and their relationship to students' development and self-perception
- knowledge of community resources available to students and their families
- ability to establish and maintain effective working relationships and to work collaboratively as a member of an educational team
- strong interpersonal, organizational, and communication skills
- commitment to professional learning specific to interpreting
- knowledge of the basic aspects of students' educational, physical, social, and emotional development
- understanding of the basic principles of educational practices, the function of support services, and the role of interpreters as part of an educational team

- AEIP programs from two to four years in length are offered on a full-time basis. ASL classes are offered in 40-hour blocks several times a year—these are the stepping stones to entry into the AEIP.

- The skill level of signers and ASL-English interpreters has a great impact on the amount of curriculum that the student who is DHH is able to access. To hire the most qualified candidate, administrators look for completion of an AEIP program.

- When trained interpreters are unavailable, individuals who are fluent in ASL may be considered as temporary candidates if they have successfully completed a recognized screening, such as the one that Manitoba Education provides.

- Job titles or job classifications for qualified interpreters tend to vary between school divisions. Professional standards support the accurate title of "ASL-English interpreter."

Interpreters follow a code of ethics that binds them to professional behav*iour and conduct. To view this code, see the Code of Ethics and Guidelines for Professional Conduct* at www.avlic.ca/sites/default/files/docs/2000-AVLIC_CoEGPC.pdf.

Glossary

adaptation

A change made in the teaching process, materials, assignments, or student products to help a student achieve the expected learning outcomes.

aided language stimulation

A naturalistic technique in which a facilitator models ways that symbols can be used for communication.

ambient noise

"Background noise, which competes with the main speech signal" (Colorado School for the Deaf and Blind).

American Sign Language (ASL)

A visual-gestural language created by people who were Deaf and used by Americans and Canadians of all ages who are Deaf. ASL defines its expression through hand shapes and movements, facial expressions, body movement, spatial relationships, and mouth movements.

assessment

The systematic process of gathering information about what a student knows, is able to do, and is learning to do.

ASL-English interpreter

A professional who has successfully completed an ASL-English interpretation program (AEIP). This post-secondary training provides graduates with knowledge of interpreting skills, Deaf culture, and the national code of ethics.

ASL specialist

A professional who provides support to teaching personnel and support personnel in implementing ASL language plans through direct training, consultation, and ongoing programming evaluation.

audiogram

A graph that represents a person's responses to sound. It is used to document the softest sound a person can detect at a variety of different frequencies or pitches.

audiologist

A professional who is qualified to assess hearing loss and recommend and fit amplification systems (e.g., hearing aids, wireless audio systems, cochlear implants, bone-anchored implant).

audiology

The medical term for the study and measurement of hearing and hearing loss.

auditory-oral method

A method of teaching students to speak by maximizing their residual hearing through the use of hearing aids or cochlear implants. Students use any natural ability they may have developed for using visual cues (e.g., speechreading).

auditory-verbal method

A method of teaching students to develop spoken language, with an emphasis on maximizing a student's residual hearing through hearing aids or cochlear implants. Speechreading is not emphasized or taught. Trained auditory-verbal therapists provide early intervention services.

auditory-verbal therapist

A speech-language pathologist, audiologist, and/or teacher of DHH who has received additional training in developing spoken language through listening.

bilateral hearing loss

A hearing loss that affects both ears.

bilateral implantation

The implantation of cochlear implants in both ears.

bimodal hearing

A system in which a person with a cochlear implant in one ear wears a hearing aid in the other ear. The hearing aid provides low frequency information that the cochlear implant does not always pick up.

computerized notetaker (CN)

A person who uses a laptop computer to type a summary of the information that is spoken in a classroom or meeting, adapting the language level, the layout, and the content to meet student needs.

conductive hearing loss

A hearing loss that occurs when one or more of the structures of the outer or middle ear are not working properly.

Deaf

A term that refers to a person with a hearing loss who uses American Sign Language and who identifies culturally with the Deaf community.

deafblindness

A condition that combines in varying degrees both hearing and vision loss, such that neither hearing nor vision can be used as a primary source of accessing information.

deafened

A term that refers to a person who had hearing and subsequently lost it, through illness or accident.

deafhood

An individual's sense of self-acceptance as a Deaf person and as belonging to the Deaf community.

domains

Specific areas of development that might be targeted in the IEP. Examples of domains include communication, social, academic, motor, cognitive, self-management, community, vocational, and recreation/leisure.

earmold

The plastic or vinyl part of a hearing aid that is custom made to fit into the outer ear.

educational assistant

A person hired by the school/division to provide support for teachers and/or students. This person is supervised directly by a teacher or principal.

educational consultant for the Deaf and hard of hearing and

teacher of the Deaf and hard of hearing (TDHH)

A teacher with additional specialized training in the education of students who are Deaf or hard of hearing. An educational consultant or TDHH supports the school team in the areas of assessment, IEP development, program planning, curriculum adaptations/modifications, and specific teaching/learning strategies. An educational consultant or TDHH also provides support with amplification needs and special devices, modifications to the visual and listening environment, specific remedial materials, and development of the student's self-esteem, self-advocacy, and identity.

educational interpreting consultant (EIC)

Provides support to the signing educational assistant or ASL-English interpreter by giving direct feedback, modelling interpreting, conducting assessments, orienting the educational team, and providing professional learning opportunities.

executive functioning (EF)

A complex set of abilities/skills that work together to regulate and direct one's thinking, behaviour, and emotions in order to stay on task and achieve goals.

expressive language

An individual's use of language.

hard of hearing

A term that refers to a person who has a hearing loss but does not have a cultural affiliation with the Deaf community.

incidental language learning

Learning words and language structures without direct instruction.

individual education plan (IEP)

A yearly written plan developed and used by a team to meet the individual learning needs of a student.

language

A system of symbols of communication (e.g., words) and the rules used to manipulate them.

Listening and Spoken Language Specialists (LSLS)

"Licensed speech-language pathologists, audiologists, or educators of the deaf who have become specialists in supporting children who are deaf or hard of hearing develop spoken language and literacy primarily through listening." (Alexander Graham Bell Association for the Deaf and Hard of Hearing)

literacy

In this document, "the ability to read, write, communicate, and comprehend" (Education Oasis).

metalinguistic knowledge

The ability to think about and comment on language.

mixed hearing loss

A hearing loss where both conductive and sensorineural hearing loss are present.

modification

Changing the number or the content of the learning outcomes that a student is expected to meet in the provincial curriculum. The student's teacher or school team makes these changes.

morphemes

Meaningful parts of words (e.g., suffixes, roots, prefixes).

morphology

Describes patterns of word formation, and changes in word meaning. For example, adding /s/ changes a word to a plural (cats) or possessive (mom's).

occupational therapist (OT) (clinician)

A professional trained to help people improve their ability to do activities related to their daily living, such as self-care, work, and leisure. The purpose of occupational therapy is to promote and maintain performance and health. An occupational therapist provides student-specific assessment, suggests student-specific adaptations and modifications to classroom equipment, and provides training of staff to help students participate as fully as possible in school programming and activities. Occupational therapists often work in conjunction with physiotherapists.

otitis media

A medical term referring to middle ear infections or inflammation of the middle ear.

parameters

The five basic parts of ASL signs (handshape, movement, location, palm orientation, and non-manual markers).

personal wireless audio system

A system which uses a transmitter, microphone, and receivers to send the teacher's voice to the student's hearing aid(s) or CI(s) by FM radio wave or digital signal or infrared signal.

phonological awareness

The ability to hear and manipulate the sound structure of language.

phonology

The study of sounds in a particular language and the rules for how they go together.

physiotherapist (PT) (clinician)

A professional concerned with the assessment, maintenance, and improvement of physical function and performance of the body. Physiotherapists often work with students who have difficulties with movement, coordination, or balance. They provide student-specific assessment, recommendations, and staff training to meet a student's physical needs. Physiotherapists often work in conjunction with occupational therapists.

progressive hearing loss

A hearing loss where, over time, the hearing becomes progressively worse in one or both ears.

psychologist, school (clinician)

A specialist in psychology and education. School psychologists are qualified mental health professionals in the areas of psycho-educational assessment, childhood development, behavioural management, individual/group counselling, and consultation.

receptive language

An individual's understanding of language.

residual hearing

The amount of usable hearing. Most people with a hearing loss do not have a total hearing loss.

semantics

The aspect of language concerned with meaning.

sensorineural hearing loss

A hearing loss as a result of problems in the cochlea, the auditory nerve, and/or the hearing centres of the brain. The most common reason for sensorineural hearing loss is damage to the hair cells in the cochlea.

signal-to-noise ratio (SNR)

The comparison of speech and noise levels. It represents the difference in loudness between the primary signal and the background noise.

signer

A person who has learned, or is learning, American Sign Language. While signers have taken sign language classes, they have no formal training in ASL-English interpretation.

sound

The sensation perceived by the sense of hearing.

soundfield wireless audio system

A system which uses a microphone and transmitter to send the teacher's voice to speakers in the classroom by an FM or digital or infrared signal.

speech

Certain sounds made with the mouth and voice.

speech-language pathologist

A professional who supports the school team by providing specialized knowledge and skills in the area of communication development and difficulties and their impact on curriculum and social outcomes for students. A speech-language pathologist provides assessment, makes recommendations, provides therapy, and suggests modifications or adaptations in the area of communication.

standardized test

A carefully constructed measurement instrument that requires specially trained individuals to ensure the tests are properly selected, interpreted, and used. (Manitoba Education, Citizenship and Youth, *AEP: Handbook for Student Services* 79)

student-specific outcome

Another term used for "goal" in an individual education plan (IEP) for a student; states what the student will learn, when this will be accomplished, and how the goal will be met.

syntax

The set of rules for combining words into sentences.

teacher of the Deaf and hard of hearing (TDHH) and

educational consultant for the Deaf and hard of hearing

A teacher with additional specialized training in the education of students who are Deaf or hard of hearing. An educational consultant or TDHH supports the school team in the areas of assessment, IEP development, program planning, curriculum adaptations/modifications, and specific teaching/learning strategies. An educational consultant or TDHH also provides support with amplification needs and special devices, modifications to the visual and listening environment, specific remedial materials, and development of the student's self-esteem, self-advocacy, and identity.

Theory of Mind (ToM)

The ability to understand that what you think, feel, or believe may not be the same as what someone else thinks, feels, or believes.

unilateral hearing loss

A hearing loss that affects only one ear.

universal design

Planning the design of structures and products at the outset for the greatest accessibility and for the widest range of individuals, using these seven guiding principles as a framework: equity, flexibility, simplicity, perceptible use, tolerance for error, comfort, and appropriate space.

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