



Educator kit

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Hearing loss in children

Hearing loss affects 1-4 infants per 1000 births.¹ This number is far greater if children with fluctuating hearing loss (resulting from ear infections) and unilateral (one-sided) hearing loss are included.

As an educator, understanding hearing loss in children is the first step towards helping your student's future. Acting early is very important.

The following kit includes:

- Information to support your understanding of hearing loss in children
- Tips to help you spot the signs of hearing loss in your students
- Tips help your students hear well and fully participate at school
- Brochure on Roger assistive technology to support you and your students in the classroom

We are also supporting the school community by offering all children a free hearing assessment valued at \$XX. The voucher can be included in the school newsletter and is valid until <date>.

If you have any further enquiries or would like more information, please don't hesitate to contact us on <phone no>.

Ears are the doorway to the brain

We're accustomed to thinking that we hear with our ears, but in fact, we hear with our brain.² The ear is the structure that captures raw sound from the environment and directs it to the brain, where auditory information is processed and given meaning. As such, our ears can be thought of as "doorways" to the brain, where hearing truly occurs

Children with a hearing loss have a "doorway issue". Any impairment, whether mild or profound, unilateral or bilateral, means that sound cannot get through the doorway of the ear and reach the brain as it should.



How sounds reach the brain – the ears

Children's ears are unique. Even the left and right ear are different in shape and size. The ear has three main parts: the outer, middle, and inner ear.

Sound is captured by the outer

ear and travels down the ear canal to the eardrum, causing it to vibrate. The vibrations are passed to the small bones of the middle ear, which increase the loudness of the sounds before they reach the inner ear.

In the inner ear, small hair cells move and release a chemical telling the hearing nerve to send an electric signal to the brain. When the electrical signal reaches the brain it is translated into meaningful sound.³

Where meaning is made from sounds – the brain

In the first few years of life, brain development is rapid and complex, and every new experience taken in by a child's

senses creates connections and neural pathways. Repetition is essential for strengthening these pathways, and in the case

of hearing, repeating words and sounds helps develop a child's brain.



Hearing loss in kids – why it’s important to act early

For children with hearing loss, sounds do not reach the brain as they should. Thus, not only do kids with hearing loss have trouble hearing sound but they also miss out on the opportunity to develop the neural pathways that are of such fundamental importance for their development.

Hearing aids for children

The purpose of the technology behind devices such as hearing aids and wireless microphones is to successfully deliver auditory information to the brain by compensating for blocked doorways. As such, we like to think of hearing technologies as door-opening devices.

Conversations build relationships

By giving children access to a world full of conversations, we can help them develop the relationships and skills they need to live life to the fullest – to play, interact, learn, communicate and ultimately, succeed.

Strong relationships help children understand their world, strengthen brain architecture and support the development of communication and social skills.⁴

The power of serve and return

Back-and-forth interactions and conversations provide the basis for these important relationships and are known as 'serve and returns'. Filled with developmental benefits they stimulate neural connections, shape brain architecture and support the development of communication and social skills.⁵ These interactions encourage children's curiosity and help them understand their world.

Both quantity and quality matter

The quantity of words and conversational turns a child is exposed to influences brain development and helps with developing vocabulary and academic outcomes.^{6,7} Young listeners need access to millions of words and thousands of hours of listening to develop spoken language and literacy.^{6,8}

It's not only the number of conversational turns that is important but also the diversity and complexity of the language you use and how clearly a child can hear it.⁹

References

1. American Speech-Language-Hearing Association. Causes of Hearing Loss in Children. Retrieved from <https://www.asha.org/public/hearing/Causes-of-Hearing-Loss-in-Children/>.
2. Flexer, Carol (2018). The ears are doorways to the brain. Phonak Insight, retrieved from www.phonakpro.com/evidence, accessed February 19th, 2018.
3. National Institute on Deafness and Other Communication Disorders (NIDCD). How Do We Hear? Retrieved from <https://www.nidcd.nih.gov/health/how-do-we-hear>
4. Mayoclinic. Pregnancy week by week. Retrieved from <https://www.mayoclinic.org/healthy-lifestyle/pregnancy-week-by-week/in-depth/fetal-development/art-20046151>
5. National Scientific Council on the Developing Child. (2004). Brain architecture. Retrieved from <https://developingchild.harvard.edu/science/key-concepts/brain-architecture/>, accessed August 19th, 2019.
6. Hart, B., & Risley T. R. (1995). Meaningful differences in the everyday experience of young American children. Paul H Brookes Publishing.
7. Romeo, R. R., Leonard, J. A., Robinson, S. T., West, M. R., Mackey, A. P., Rowe, M. L., & Gabrieli, J. D. E. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language-related brain function. *Psychological Science*, 29(5), 700–710.
8. Dehaene, S. (2009). *Reading in the Brain: The Science and Evolution of a Human Invention*. Viking.
9. Hurtado, N., Marchmann, V. A., & Fernald, A. (2008). Does input influence uptake? Links between maternal talk, processing speed and vocabulary size in Spanish-learning children. *Developmental Science*, 11(6), 31–39.

Signs of hearing loss in children

Always be alert to situations where your student is not responding to sound appropriately, as this may be a sign of hearing loss. Sometimes it is difficult to detect mild forms of hearing loss, including hearing loss in only one ear. It is important to remember that even mild forms of hearing loss can negatively impact a child's ability to learn through hearing.

The most important sign of possible hearing loss is delayed development of speech and language. The following are other signs that a child may not be hearing normally:



- Not aware that someone who is out of view is talking, especially when there are few distractions
- Startled or surprised look when they realise their name has been called regardless of noise level
- Sitting close to the TV when the volume is enough for other family members to hear
- Increasing the volume of the TV or stereo to unreasonably loud levels
- Not responding to voices over the telephone and/or switching ears continually
- Not reacting to intense, loud sounds

Children with even a mild hearing loss, may exhibit attention, behavioural or social problems in the classroom.

Taking action early is important. If you spot any of these signs, we recommend contacting the child's parent and advising them to have the child's hearing assessed by a qualified Audiologist or hearing care professional.





Communicating effectively*

Educators can employ a handful of simple techniques in the classroom to make a big difference for their students with hearing loss:



Face the student when speaking

Make sure that your face is visible when speaking. Also, try to face the child with hearing loss as much as possible.



Use the buddy system

Buddy up a hearing student with the hearing impaired student with. This can help the student with hearing loss know where the class is in the lesson; it can also help a busy teacher.



Repeat yourself

Provide context and repetition, which is helpful not only to students with hearing loss



Assistive technologies

Assistive technologies can also improve success in the classroom for students with hearing loss. They can increase access to sound and eliminate background noise. The most common of these is a remote microphone called the **Roger Touchscreen Mic**. This device uses Bluetooth technology to transmit sound from the speaker directly to a child's hearing technology. This solution is highly effective when it's used correctly.

It's also important that the

speaker, whether that's the teacher, a guest speaker, or other students, wears the microphone. If the situation is not conducive to passing the microphone around the classroom, the teacher can get the same net result by repeating back what others are saying.

Teachers can maximise the potential of assistive technologies by communicating its importance to other students, parents, and faculty, including substitute teachers and the administrative staff.

Finally, encouraging children to advocate for themselves to advocate for themselves is perhaps the single most important thing a teacher can do to help a student. If you create an environment in which a child with hearing loss is comfortable raising his or her hand to say, "Excuse me, teacher; I can't hear you," you will undoubtedly continue to change the lives of the students you teach.

*Source: Hearing Like Me: Hearing Loss Community Blog

If you have any further information or would like a demonstration of the Roger assistive technology, we would be happy to provide you with a complimentary demonstration.

Please contact <contact details> to arrange a time.