Life is on

We are sensitive to the needs of everyone who depends on our knowledge, ideas and care. And by creatively challenging the limits of technology, we develop innovations that help people hear, understand and experience more of life’s rich soundscapes.

Interact freely. Communicate with confidence.
Live without limit. Life is on.

www.phonak.com/FM
Enhanced hearing through technology

All parents and caregivers want their children to develop normally and be able to communicate effectively. In the formative baby and toddler years, consistent access to speech is crucial since children develop their speech and language skills by listening to others talk.

For children with a hearing loss, learning a language can be challenging due to the lack of consistent exposure to all relevant sounds. As a result, such children are slower to produce these sounds and therefore slower to learn the words and phrases that contain them. High-pitched sounds such as the letters /s/, /f/ and the sound /sh/ for example are critical to understanding and therefore the acquisition of meaningful speech and language abilities.

How does Dynamic FM work?

A FM system comprises a wireless microphone, worn by a parent or caregiver, and tiny FM radio receivers that fit smoothly and discretely onto a child’s hearing aids. When the parent talks, their voice is picked up by the wireless microphone close to their mouth and these sounds are sent wirelessly to the child’s FM receivers. This received signal is then amplified by the hearing aid, providing the child with the highest quality speech sounds possible.

Phonak hearing aids for young children feature unique SoundRecover technology. This emphasizes those all-important high-frequency speech sounds that a child with hearing loss is unable to consistently identify, and shifts these to a frequency where they can be heard. To ensure a child’s hearing capabilities are not compromised when the surrounding noise becomes more intense, or when listening over distance, Phonak also recommends adding wireless Dynamic FM technology. This works seamlessly with SoundRecover to create a comprehensive hearing system, bringing clear speech sounds from the speaker right to the child’s ears via their hearing aids. This approach has been scientifically proven to aid speech understanding, meaning learning opportunities are maximized whatever the situation or the child’s degree of hearing loss.

This brochure explains exactly how Phonak’s combined SoundRecover and Dynamic FM technology can benefit every child with a hearing loss; performance that is proven by a large number of peer-reviewed scientific studies from across the globe.

SoundRecover

A child’s speech and language development is dependent on them being able to hear parents’ speech sounds accurately, especially high-frequency sounds such as the letters /s/ and /f/. SoundRecover technology inside Phonak hearing aids delivers consistent access to these important sounds, ensuring they are always audible whatever the child’s degree of hearing loss.

Dynamic FM

In difficult listening situations such as group activities, in the car and outdoors, there is no better way of bringing the speaker’s words into the ear than wireless Dynamic FM by Phonak. This intelligent technology analyses the surrounding noise levels and transmits the speaker’s words into the child’s ears, helping the child hear and focus directly on what is being said.

References: Completed independent research on SoundRecover and its benefits for children can be found at: www.phonak.com/soundrecover
FM technology – bridging the hearing gap

Very few real-life listening situations are perfect, as there is usually some form of distracting sound that a child must contend with, whether this is the sounds of other youngsters shouting and playing, traffic or road noise, or the busy hum of a bustling shopping center.

Bringing speech directly from the speaker's mouth to a child's hearing aids – by way of FM receivers overcomes the three most common challenges for children with a hearing loss:

- **In noise**
  In noisy situations, the volume level of the voice the child is trying to hear may be lower than the level of the background noise. FM boosts this signal to a level the child can hear and understand.

- **Over distance**
  If the distance between speaker and child is too great, even if this is just 6–10 feet (2–3 m), the parent or teacher's voice will lose its intensity and become too weak for the child to hear and respond to.

- **In reverberation**
  Rooms like classrooms and kitchens are often acoustically challenging spaces in which the speech sounds of a teacher or parent can bounce off hard walls, floors and ceilings, making this signal harder to understand.

Independent studies have proven that using FM technology in such situations both encourages children to imitate their parent's speech (leading to parents talking to their children more)¹ and can increase language acquisition rates². Additionally, FM use in the classroom (or pre-school) has been found to be an effective way of improving the listening environment and reducing the problems associated with speaker-to-listener distance, poor speech-to-noise ratio, and room echo³.

“The benefits of FM for any age child in the car are significant, but especially for young children who are confined to car seats in the back. Depending how much time is spent in the car each day, this one application alone would be worth the investment in FM. Without the enhancement FM provides, car noise and the lack of visual information clearly reduce the audibility and intelligibility of speech, resulting in lost language development opportunities with the child!”

– Cheryl DeConde Johnson, Ed.D., University of Colorado, USA

References: ¹ Benoit, 1989 | ² Moeller et al., 2009 | ³ Crandell et al., 1993
FM benefit: improved speech and language development

In order to acquire language and learn to communicate, a child needs to be exposed to spoken language from birth. The more spoken language a child hears, the more that child has the opportunity to combine these sounds with what they see, feel, smell and taste, which is how a child learns to correctly associate words with their meanings.

Of primary importance is a child’s ability to hear and process incoming sound information, whenever and wherever this occurs. This of course includes hearing in challenging listening situations such as at the playground or travelling in the car.

Linda Thibodeau’s 2008 research noted that young children with a hearing loss paid more attention to sound and actively searched them out more when wearing an FM system. In Imran Mulla’s 2011 study, parents of very young FM users also highlighted their children’s improved listening, speech comprehension and focusing skills across a range of situations.

In Mulla’s 2011 study FM use by young children with a hearing loss who were considered at risk of language learning delay was proven to have a positive impact on their language test scores, with the children’s parents and pre-school teachers also recognizing an improvement in their expressive speech when using FM.

Once a child has heard a particular speech sound enough times (experts suggest around 500 repetitions), their next language development step is utilizing that sound in order to express themselves. This improves their ability to communicate and thus socialize, which in turns opens up many more opportunities for learning and development.

In another study by Moeller in 2009, FM systems were also reported to improve communicative contact between a parent and an active toddler, while additional studies have found that using personal FM systems can address those difficult situations that young children with a hearing loss struggle to hear speech in, such as car rides and outings.

References: Linda Thibodeau, 2008 | Imran Mulla, 2011
1 www.drummy.com | Moeller et al, 2009 |
2 AAA, 2003; Thibodeau & Schafer, 2002
FM benefit: enables socialization

A child that interacts fully with its peers and adult speakers quickly develops social skills and as a result is exposed to more language, giving the child greater opportunities to listen, get involved and learn further. The degree to which a child connects with his or her environment, rather than sitting alone (i.e. as a result of not being able to hear), is also an important measure of the child’s overall quality of life.

In Mulla’s 2011 study into FM use by young children, three out of four parents whose children regularly attended pre-school noted how staff recognized an improvement in their child’s ability to engage in activities. In the journals the parents kept, “joining in more” was a consistently recurring theme.

“At the nursery [my daughter] never normally joins in with singing. She never sits in the circle just stands and watches from a distance. (With the FM system) she sat next to her key worker who was wearing the microphone and joined in”
– Parent, Mulla study, 2011

When to add FM

Quite understandably, many parents become overwhelmed by the unexpected demands of using hearing technology with their child. Therefore it is usually most helpful to add FM technology after parents (and/or teachers) have mastered the care and use of a child’s personal hearing aids. FM can be used effectively in many situations from 6–12 months of age, as a child becomes more mobile. This way, an FM system is more likely to receive the time and focus it requires to be fully accepted by all.
The feeling of security is crucial to a young child's happiness and wellbeing. However for children with a hearing loss it is often easy to miss important warning sounds and alerts, especially when distances and surrounding noise are added to the mix.

FM technology effectively bridges this warning gap, allowing a child to hear and respond to such alerts even over distance or when they cannot see the person speaking.

In Mulla's 2011 study, mothers noted that their toddlers were more confident and alert, and turned (i.e. responded) to many different sounds when wearing FM. These mums and dads also reported that it was easier to get their toddlers' attention at a distance and that the children complied better with parental requests when playing outdoors. This in turn reduced the mothers' safety concerns, for instance when their child ran off in a department store, they could communicate to them via the FM, avoiding the need to chase after the child.1,2

"With the FM she can hear me even though she can't always see me, which means she's a bit more confident at playing on her own or playing with other children. She knows that she can hear mum if she needs to, where as before she would be constantly looking for me. I don't have to be in view all the time."
– Parent, Mulla study, 2011

References: 1 Mulla, 2011 | 2 Moeller et al., 2009
FM benefit: it helps keep the hearing aids on

Hearing aids can only do their job of amplifying sound when they are in a child’s ears, and while this fact may be obvious to adults it does not mean a child will always comply. Studies have found that when FM technology is used alongside hearing aids, this can actually improve a child’s retention of his or her hearing aids.

For example, 50% of the parents in Mulla’s 2011 FM study1 reported that hearing aid use increased in line with their young children’s FM use. For one mother in particular the increased consistency of hearing aid use was a very strong theme, and she noticed an increase in hearing aid use immediately after fitting the FM system.

Similarly, in Moeller’s 2009 study2, the authors found that two out of three families who managed to get their children using hearing aids all the time in the car achieved this by adding FM systems.

“From day one my daughter seemed to keep her hearing aids in more. It was the first time she has ever kept her hearing aids in whilst in the car and she fell asleep.”
– Parent, Mulla study, 2011

References: 1 Mulla, 2011 | 2 Moeller et al., 2009
A Phonak solution for every child

Nios S H20 + ML15i
Designed with a child’s sense of adventure firmly in mind, the Nios S H2O is a tiny WaterResistant hearing aid. The ML15i is a design-integrated Dynamic FM receiver that slots neatly onto the hearing aid for instant speech access.

Suit: mild to severe hearing loss

Naida S SP + ML11i
Naida S SuperPower (SP) is a sophisticated high-power hearing aid for children with a moderately-severe to profound hearing loss. Combine this with the ML11i Dynamic FM receiver for clear speech understanding in every situation.

Suit: moderately-severe to profound hearing loss

Naida S UP + ML10i
Naida S UltraPower (UP) is a sophisticated high-power hearing aid for children with a severe to profound hearing loss. Combine this with the ML10i Dynamic FM receiver for effective speech understanding in every situation.

Suit: severe to profound hearing loss

MLxi
The MLxi Dynamic FM receiver can also be used as an alternative receiver with the hearing aids above.

Suit: moderately-severe to profound hearing loss

inspiro
This highly adaptable belt-worn Dynamic FM transmitter is designed for use by parents or teachers, at home and at school. It is available with iLapel (collar-worn) or EasyBoom (face-worn) microphones.

ZoomLink+
This versatile Dynamic FM transmitter features three microphone modes to suit every listening situation and audio input for simple multimedia listening.

SmartLink+
This advanced Dynamic FM transmitter features three microphone modes to suit every listening situation, built-in Bluetooth for easy cellphone use, an audio input, and a Phonak hearing aid remote control feature.

EasyLink+
This super-simple Dynamic FM transmitter features one configurable microphone mode (programmable by a hearing care professional), an audio input.