Assistive Listening Device in the Classroom for schoo

Deaf children frequently use assistive listening devices to help them listen to a speaker, such as their teacher, in difficult listening conditions. The use of this equipment does not negate the need for improving poor acoustic conditions in a school. Indeed, the better the acoustics in a classroom the more benefit they will derive from the use of this equipment.

Personal FM systems

Many deaf children (and adults) find personal FM systems (often known as radio aids) very useful, especially at school, college or at home. They can help reduce effects of background noise in, for example, a school classroom, and help a child to concentrate on one person's voice, often their teacher. The majority of personal FM systems are provided by local education services.

All personal FM systems have two main parts: the transmitter and the receiver. The person talking wears the transmitter. A microphone picks up the speaker's voice. The sounds are then transmitted by radio waves to the receiver. The deaf child wears the receiver. This picks up the radio signal from the transmitter and converts it back to sound, which is amplified by the child's hearing aids or implants.

Personal FM systems work on different frequencies. For example, each school classroom might have its own frequency so that it does not interfere with the class next door.

Most children connect their personal FM system receiver directly to their hearing aid/s or cochlear implant processor by a lead. The lead is attached to the hearing aid with a shoe. Using direct input means that both nearby sounds and the child's own voice will be picked up. This type of personal FM system can be worn either on the chest or on a waist belt. Miniature receivers which are attached directly to a hearing aid or cochlear implant processor are also available.

An alternative method of using a personal FM system receiver is through the use of a neck loop which can be worn over or under the clothes. This loop is connected to the personal FM system receiver by a thin lead. The child's hearing aid must be switched to the 'T' setting. Using a neck loop can cause difficulties. Interference can be a problem and the quality of sound can vary. However, using a neck loop may be the only option for people who have in-the-ear hearing aids.

For more information or for a copy of Radio Aids - An introductory guide, or to find out about the NDCS Blue Peter Loan Service, please contact the NDCS Freephone Helpline on 0808 800 8880 (voice and text). You can also view items for loan on the NDCS website: www.ndcs.org.uk

Classroom soundfield systems

Classroom soundfield systems should not be confused with personal FM systems, although they are designed for similar purposes. Soundfield is an increasingly popular system designed to improve listening conditions for all children in the classroom.

A soundfield system includes a microphone worn by the teacher. This is linked to an amplifier by either an FM radio transmitter or an infra-red transmitter, to avoid the need for wires and allow the teacher to move around the room. Loudspeakers are fitted around the classroom, often on the walls or in the ceiling. The soundfield system makes the teacher's voice louder. However, the aim is not to produce a very loud sound because soundfield is not like a public address system. The aim is to produce a clear and consistent level of sound throughout the classroom. The teacher's voice is made just loud enough to be heard above unwanted background noises. A soundfield system that is set up correctly may be barely noticeable. The teacher should not notice a big difference when they are speaking. The soundfield amplifier may have controls that allow the output to be set to the correct levels for the room. Without soundfield the children who sit near the teacher often hear well whilst those who are further away struggle because the sound signal is greatly reduced.

Most children who wear a hearing aid or a cochlear implant will still need to use a personal FM system and will be able to use it successfully in a classroom with a soundfield system. However, both devices must be set up correctly to work alongside each other. How to do this will depend on the particular products. Teachers also need to be clear about the correct way to use the technology.

The groups most likely to benefit from soundfield are children with mild deafness, who may otherwise be given no extra support at school, and children with language, learning or behavioural problems. However, as all children are continually building their language base and developing their listening skills a soundfield system is beneficial for all. Children can spend about half the school day listening and for effective speech intelligibility they need a higher signal to noise ratio than adults, a soundfield system set up and managed effectively can provide this. Effective listening is essential for learning. Additional benefits of a soundfield system for children can be improved speech clarity and verbal recognition and also concentration and academic performance have been shown to improve.

A soundfield system is also very helpful to the teacher. As well as helping them to avoid straining their voice, research has suggested that soundfield systems can improve discipline and attention for all children. Also it has been suggested that less repetition is required by the teacher allowing lessons to flow smoothly leading to more successful lessons and a less stressed teaching day.

In addition to soundfield systems there are personal radio receivers which can be very useful for children who do not wear hearing aids or have a cochlear implant but have difficulty concentrating or picking out different sounds in the classroom. One of these is a portable soundfield system which is a radio aid receiver with an amplifier and loudspeaker. These are all contained in a portable case which can be taken from class to class and placed on the child's desk. The teacher wears the transmitter and microphone and the child hears it through the loudspeaker. The other is a personal behind-the-ear receiver with an earphone such as Phonak Edulink.

If it is practical to improve the acoustics of a classroom then doing so should be the first step. Fitting a soundfield system in a room with poor acoustics could make listening conditions more difficult, rather than improving them.