

## **FM SYSTEMS FOR THE CLASSROOM**

### **Listening Problems In the Classroom**

In a typical classroom, there are often many distracting background noises such as talking, paper rustling, shuffling feet, air-handling systems and audio-visual equipment. These sounds may be almost as loud as a teacher's voice.

In addition, most teachers move around the classroom or turn away from students when writing on a chalkboard, causing the loudness of their voice to vary. For most students with normal hearing, everyday classroom noises do not cause problems.

For students with a hearing loss, however, background noises and distance can interfere with hearing and understanding. For these students, hearing aids can amplify the teacher's voice, but they also amplify background noises. Even with the use of hearing aids distance effects are still present. Students with minimal or fluctuating hearing loss, unilateral (one-sided) hearing loss or attention problems also struggle with background noise interference and distance effects, and may not be candidates for hearing aids.

### **What is available to students to help with these problems?**

FM (Frequency Modulated) systems may be a solution for many students. FM amplification systems (also called auditory trainers) transmit the teacher's voice directly to the student at a constant level, insuring that the teacher's voice is heard above the level of background noise, regardless of the teacher's distance from the student.

FM systems consist of a microphone, a transmitter (or mic-transmitter combination), a receiver and some method of routing sounds from the receiver to the student's ear.

The teacher wears the microphone and transmitter. The microphone is placed eight inches or less from the teacher's mouth. The transmitter changes the electrical signal from the microphone into an FM signal, which is sent to the student's receiver. Because the teacher's mouth is close to the microphone, background noise is much softer by comparison.

In addition, no matter where the teacher stands in the classroom, the student will hear the teacher's voice as if it was coming from a few inches away. Most FM systems also allow teachers to connect audio and audio-visual equipment to the FM transmitter, providing a clear audio signal to the student.

### **FM System Options**

There is a large variety of FM systems and options available for the classroom. Parents, the student, school personnel and the student's audiologist should work together to choose a system that will provide the most benefit and flexibility in the student's environment.

Once an FM system is chosen for a student, it must be set to fit their individual listening needs. An audiologist, using specialized test equipment, adjusts both external volume controls and internal response controls. In addition, school personnel benefit from in-service training about using and troubleshooting FM equipment. FM system use requires planning and teamwork to help students with hearing losses succeed in the classroom.