

Soundfield Amplification Systems

by Barbara Franklin, Ph.D.

Classrooms provide a poor acoustical environment for many students who have a hearing loss or a combined hearing and vision loss. The three environmental factors that account for a decrease in hearing ability are: 1) Distance – Since sound decreases as distance increases, speech discrimination also decreases as the distance between the teacher and student increases, 2) Background Noise – It is harder to hear as the speech to noise ratio increases, and 3) Room Acoustics: When sound bounces off a surface it causes an echo and the resulting reverberation can mask speech. Hearing in the classroom is therefore a problem even when wearing hearing aids.

The problems described above can be remedied whereby the student wears a personal FM system and the teacher's voice is delivered directly through the hearing aid(s). A more satisfactory arrangement uses some form of soundfield system that is much less restrictive and provides sound from all over the classroom. A soundfield system consists of a microphone and one or more loudspeakers that amplify the teacher's voice throughout the classroom.

The earliest report of the advantages of soundfield amplification was the 1981 Mainstream Amplification Resource Room Study (MARRS). There have been numerous studies since then demonstrating improvement for a wide range of populations, including: mild hearing loss, language delay, English learners, learning problems, attention deficit disorder (ADD and ADHD), auditory processing disorders and autism spectrum disorders.

Phonak has recently introduced their Dynamic SoundField system that automatically varies the gain of the loudspeaker with the background noise of the classroom. Dynamic SoundField is easy to install because it uses only one or two speakers—free standing or mounted on the wall. SoundField systems support inclusive education because all students have been shown to benefit from enhanced amplification. In addition, Phonak has also developed “Roger” which is the only single microphone capable of transmitting simultaneously to almost all behind-the-ear hearing aids, personal FM systems, soundfield systems, and even Bone Anchored Hearing Aids (BAHAs).

Oticon has recently introduced its Front Row Juno, which is a powerful new tool for teachers and complements students' personal FM and soundfield systems. This new technology makes an MP4 video of everything that goes on in class. For example, it allows the student to review specific things when they go home. The daily classroom videos can be accessed on Google Apps for Education, as well as on a number of other sites.

California Deaf-Blind Services
San Francisco State University
1600 Holloway Avenue
San Francisco, CA 94132-4158
(415) 405-7560 VOICE/TTY
(415) 338-2845 FAX
www.cadbs.org