General Information on FM Systems

Purpose of FM

FM systems have been proven to aid students with any type of hearing loss in various classroom settings. Hearing aids and cochlear implants help to amplify and/or process sound, but they do this to all sounds. The teacher's voice may be amplified, but so is the sound of the garbage truck outside, or the air-conditioner, or the students in the back of the room having a private conversation. FM systems help with something called sound-to-noise-ratio (SNR). In an ideal situation the SNR will be quite low, allowing the student to hear what he/she needs to hear. But this is not typical of any classroom, special education or general education. An FM system makes it so that the speaker's voice is amplified. The sound of the speaker's voice is picked up by a microphone and transmitted to the student with the hearing loss where it is amplified in the receiver. This allows the speaker's voice to sound consistent to the student no matter how far away from the student he/she is standing.

*Though FM systems can be very beneficial, they do not benefit every single student.

Type of Transmitters

Personal: The speaker talks into a microphone and the teacher's voice is transmitted through a personally worn transmitter directly to a receiver worn by the student. The receiver then amplifies the sound for the student. The personal FM system is transportable so it can be used in any situation, such as in an assembly or in various classrooms. The microphone and transmitter can easily be transferred between various speakers. Some systems even allow for multiple microphones to be used at a time.

Soundfield: A soundfield amplifies the speaker's voice to the whole classroom. Studies have shown that this classwide amplification can benefit all students in the classroom, not just those with a hearing loss. It does not require the purchase of a personal receiver. Classroom acoustics directly impact the effectiveness of a soundfield system. The drawback to this type of transmitter is it is limited to one classroom. A soundfield cannot be transported between different rooms easily. So if the student travels to different classes the school will either need to have all of the classes set up with a soundfield or not provide the student with amplification in those other classes. Soundfields also tend to be more expensive if budget is an issue.

Type of Receivers

Boots (shoes): Plugs directly into hearing aid or cochlear implant. Need to know the student's type of aid or implant in order to determine the correct boot to use. Most common. Great for young kids because unless their whole hearing aid or cochlear implant comes off, they cannot drop it and break it. It does not require them to wear anything on their body.

*if an FM boot is selected as the receiver, districts may want to consult with audiologists to determine which boots will work with the students' specific hearing aids or cochlear implants.

iSense: Used by individuals who do not use hearing aids or cochlear implants. It looks like a very small Behind-the-Ear (BTE) hearing aid without the large part that goes in their ear. Typically these are individuals with atypical hearing losses. (Made by Phonak)

Neckloop: Worn around the neck in front of the body. Looks similar to a lanyard. Used more often by adults or older students. Not very discrete. Sometimes makes students feel self-conscious about their hearing loss.

Body worn: Student wears a receiver on the belt loop or in a pocket which is connected to headphones. This type of system can only be used by students who do not utilize hearing aids or cochlear implants.

Type of Microphone

Lapel: Clips onto speaker's shirt near the collar. Very discrete. Main issue with this type of microphone is that the teacher's volume will fluctuate slightly as they turn their heads because the sound source is either moving closer or farther from the microphone. Also, you can occasionally get feedback from it rubbing against clothing.

Boom: Speaker wears the head strap or harness behind their head so that the microphone swings down near their chin. The main issue with this type of microphone is that if not adjusted correctly students can hear the teacher's breathing as well as their speech. Also, the boom can sometimes obstruct a student's view of the speaker's mouth.

Handheld: Typical handheld microphone. Not ideal for a classroom setting because it limits the teacher to the use of just one hand.

*Type of microphone depends upon personal preference of the teacher or the district. Lapel and Boom are most common. I personally prefer the lapel.

Resources

eSchoolDesk-this is a website specifically designed to be an FM support tool for teachers and hearing professionals
www.eSchoolDesk.com

Phonak- Phonak is a leading company in production of hearing systems, including hearing aids, cochlear implants, and FM systems. You can view their catalogues and services on their

website. Their dynamic FM system "inspiro" is an award winning system designed for the classroom and is commonly used by many schools. (This is the system that I am most familiar with.)
www.phonak.com

Oticon- Oticon is the oldest hearing aid company in the world and continues to be a leader in hearing solutions. Their Oticon Amigo FM system is made for students in the classroom. It is a personal FM system that uses a boot receiver.
www.oticonusa.com

Harrison Communication- Harris Communication is a leader in assistive technology for the deaf and hard of hearing. They offer some options for FM systems to be used in the classroom.
www.harriscomm.com

Lightspeed- Lightspeed offers several FM options, including body worn and soundfield options. The FLEXCAT offers multiple classroom speakers if there are multiple students with a hearing loss in the room.
www.lightspeed-tek.com

Phonic Ear/Frontrow- Phonic Ear and Frontrow are two companies that have merged. Frontrow produces simple, affordable soundfield amplification systems. Phonic Ear produces personal body worn amplification systems.
gofrontrow.com