

A teacher with short blonde hair, wearing a headset with a microphone, stands at the front of a classroom. She is holding a small wooden sign that says "four". In the background, there is an American flag, a globe, and a colorful poster. Several young students are seated at desks, some with their hands raised. The scene is brightly lit and has a warm, educational atmosphere.

Bringing Learning To Life.

wireless
assistive
listening
systems

TELEX[®]

OVERVIEW



Telex. We Bring Learning To Life.

The classroom. A mix of voices. Kids. Equipment. Not to mention countless noises from outside the classroom. Unfortunately, these things detract from a classroom's primary purpose — learning. That's why we at Telex developed our state-of-the-art ClassMate™ SoundField Systems. Our systems cut through the distractions, so students can hear — and understand — what their teacher is saying. And they reduce the need for excessive speech projection so teachers can spend less energy trying to be heard and more energy teaching young minds.

Our ClassMate™ systems are reliable and versatile so they can provide intelligibility to any room, regardless of its acoustics, size or shape. And we build more user-friendly features into our systems than anyone else. So, whatever your SoundField needs are, call Telex. Let us help you bring learning to life.





SoundField Systems — Providing Intelligibility To The Learning Area

The right SoundField Amplification System can improve the entire classroom learning environment. For students, the right SoundField System can lead to improved academic achievements, improved speech recognition skills and increased self-esteem. For teachers, it means reduced vocal strain as well as increased mobility and instructional versatility.

The key to success; however, is not amplification but intelligibility. There are a number of factors that determine the intelligibility in the learning area:

- A sufficient signal-to-noise ratio. *The most important consideration is how clearly the student hears the teacher's voice. A SoundField System should amplify the teachers voice 8-12 dB above the classroom's background noise.*
- Even sound dispersion (sound levels) throughout the learning environment.
- Directional realism. *That is, while the amplified voice is actually coming from the speakers, it sounds as if it is coming from the source (the teacher).*
- A high ratio of direct sound energy to delayed or reverberant sound energy.
- Is there adequate bandwidth for speech?
- A lack of distortion from buzzes and rattles in the building and/or equipment.

The typical SoundField System includes a wireless microphone which transmits speech to speakers strategically placed within a classroom. To choose the right system, you must consider such variables as teaching style, seating arrangement, room size and room acoustics. Speaker and microphone specifications, as well as speaker placement within the room, are also crucial.

Transmitters

The wireless microphone should be chosen for its specifications, durability and comfort. Lapel, boom, collar and handheld microphones should be chosen according to the preference of the user, keeping in mind that the quality of the sound pick-up is dependent upon an unobstructed path between the user's voice and the microphone.

Speaker Types

There are three primary types of speakers to choose from — shelf/wall speakers, central ceiling clusters and a small personal system. They can be used separately, or in combination with one another. Choosing the best speaker type and configuration for a classroom depends on factors such as speaker specifications, sound coverage, classroom layout, installation ease and portability needs.

The speakers you select should be free from distortion and have a good frequency response. Individual volume controls, tone controls and on-off switches increase flexibility for a variety of environments. Built in amplifiers and receivers are also helpful, as the system takes up less space.

What To Consider When Choosing A SoundField System

- **Who is communicating to whom?**
Is a single teacher speaking to a large group? Does the class require large and small group instruction? Is it a team teaching environment? Is a separate handheld microphone for student use needed?
- **Where is the sound source and where are the listeners?**
Perhaps the teacher is always in the front of the room. Or maybe the teacher uses a specific area for small groups. Where are the students located during each learning activity? How many students are in each learning area? Is the sound non-directional so that it sounds as if it is coming from the teacher even if he/she moves around the room?
- **What is the architectural configuration of the room?**
Length, width and ceiling heights are direct considerations. What are the surface areas on the walls, floors and ceilings? Where are the windows, doors and blackboards located? Is there a suspended ceiling?

Ceiling Systems — Generally The Best Solution

In general, the central speaker system is the best and most cost-effective speaker system for the typical classroom. It is installed in the center of the learning area on the ceiling. The angles of the speakers direct the sound toward the listeners, providing a more evenly distributed sound and eliminating problems of directionality, slap echoes and reverberation.

For classrooms that incorporate both large group and small group learning activities, combine a central ceiling speaker and shelf speakers. (Use the ceiling speaker for large group situations. For small group activities, turn the ceiling system off and shelf speakers on to maximize intelligibility within each small group.) This combination is also ideal for L-shaped rooms.

Shelf Speakers: For Specific Needs

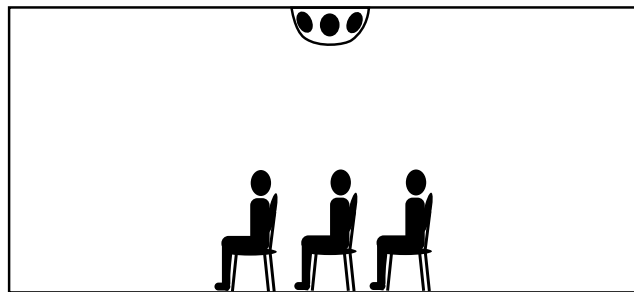
Shelf speakers are recommended in a variety of specialized situations.

- When you need a portable system.
- If there is an unavoidable noise source in the room such as a wall fan. *Placing a shelf speaker near the noise source and facing it towards the listening area can improve intelligibility.*
- For classrooms that incorporate small group learning activities.
- In an open concept classroom situation. *The shelf speaker should face the learning area.*
- For especially narrow classrooms.
- For students needing extra gain (such as cochlear implant students).

Shelf speakers tend to give directionality to the sound which can be distracting at times (i.e., you hear the sound coming from the system's speaker behind you, but you see the teacher talking in front of you). To distribute sound evenly in the room, the speakers should be placed in an upright position 7 feet off the floor, angled slightly down. Never have shelf speakers directly across from each other as they will be "in phase" and cancel each other out.

Other Considerations

Keep in mind that anything in front of a speaker's distribution path — furniture, hanging light fixtures, low beams, or even other students — can inhibit sound dispersion. Also, remember that the students are not always in one location in the room, so you need to listen to the system by walking all around the room while someone is talking. Refer to the following diagram for general guidelines on speaker placement. Call your Telex representative for additional help.

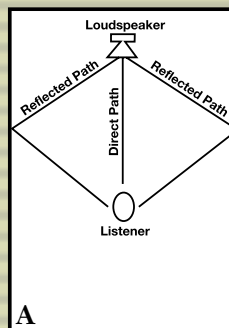


The speaker should be placed in the center of the room relative to students.

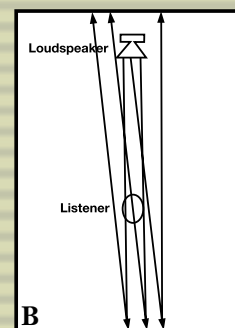
Guidelines For Selecting And Placing SoundField Speakers:

- Even sound distribution to the learning area is a must.
- Direct, not reflected, sound is best. (see illustration A)
- Avoid slap echoes whenever possible. (see illustration B)
- The inverse square law applies in speaker placement. That is, there is a 6dB decrease in SPL (sound pressure level) for each doubling of distance involved.
- Room acoustics affect reverberation and echoes. Soft materials like carpet, drapes, soft furniture and people absorb sound. Hard surfaces such as windows, blackboards, and smooth walls reflect sound.
- Sound distribution should sound natural and not distract students from what the teacher is saying.

Room Reflections



Slap Echoes



Team Teaching Option

Telex offers its SoundField Systems in a variety of configurations, including a Team Teaching system which includes two transmitters and a ceiling speaker unit and two converted FM receivers. This allows two teachers to speak at once without having to pass a transmitter back and forth. Combining the ceiling unit with shelf speakers lets teachers speak to the entire class through the ceiling unit, then easily switch to individually placed shelf speakers for small group activities and other specialized needs.

TELEX[®]

CEILING SYSTEMS



*The ClassMate™ Ceiling
SoundField System*



Presenting The ClassMate™ Ceiling SoundField System.

For maximum intelligibility right to the heart of the classroom, Telex proudly offers the ClassMate™ SoundField System. This ceiling mounted unit broadcasts through six speakers for clear, even sound distribution throughout the learning area. The unit is easy to install. It simply rests in the framework of any suspended ceiling or hard mounts on a flat surface or beam. And with 40 frequencies available — every classroom can have a clear, clean signal. In all, the ClassMate™ Ceiling System is clearly the most advanced choice to ensure that all of your students can hear, no matter where they are in the room.



TELEX®

CLASSMATE



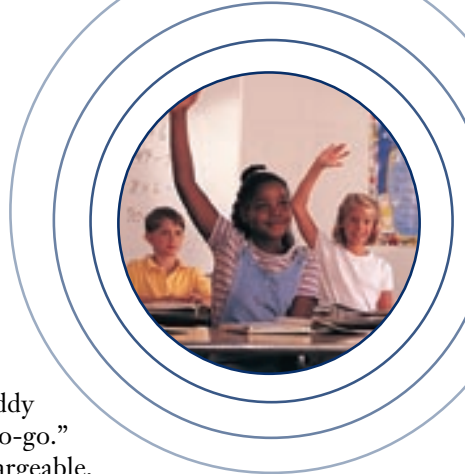
The ClassMate™ SoundField Amplification System.



The SF-1 SoundField Amplification System

At Telex, we believe that everyone in the classroom should have the very best opportunity to learn, no matter what acoustical challenges they face. So we designed the ClassMate™ SoundField Amplification System to be flexible enough to accommodate nearly any situation easily and efficiently. The shelf/wall speakers are small, compact, and wireless so they are easy to install — just plug them in to an outlet and they're ready to go.

In addition, each speaker has its own amplifier, volume control, tone control and on/off switch, making it the most versatile and flexible system on the market today.



Telex Transmitters

Telex offers a variety of collar, boom and lapel microphones designed for maximum comfort, performance and ease of use. Batteries last up to 10 hours and are internally rechargeable by placing them in a drop-in charger. Individual mic/volume controls provide teachers with maximum system control and a built-in mute button lets teachers talk privately without turning off the transmitter. In addition, each transmitter includes an auxiliary input for TV's, music, etc.

Complete 4-Speaker System

Telex's ClassMate™ SF-50 SoundField System is an easy-to-install, value-priced, FM-wired system. The SF-50 amplifies the teacher's voice 10-12 dB above the classroom's background noise level. Its wired 4-speaker system evenly distributes sound levels throughout the learning environment. Plus, it decreases interference, which can be caused by delayed or reverberated sound energy.

Focused Wireless Power

The SF-1 SoundField Amplification System amplifies the teacher's voice over background sounds, providing a 10-12 dB signal-to-noise ratio advantage. The teacher's voice will be easier for students to hear amidst the distracting sounds of a typical classroom. While at the same time, whether the student is in the front or back rows they'll receive instructions clearer and more accurately — it's SoundField, just the way you need it.

Portable Versatility

The ClassMate™ Sound-Buddy from Telex is "SoundField-to-go." It's a battery-operated, rechargeable, portable SoundField System. It features 16 user-selectable channels operating on wide-band frequencies between 72-76 MHz, for interference-free operation. Plus, it offers a water-resistant, all-weather speaker and includes a rugged denier nylon zip-top bag. It's ideal for use with mild-to-moderate losses and cochlear implants.



The Sound Buddy Personal SoundField System



The SF-50 SoundField Amplification System

sound solutions
sound value

TELEX[®]

Sound Solutions. Sound Value.[™]

12000 Portland Avenue South
Burnsville, MN 55337
www.telex.com/hearing

800-328-3102